



WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT

Benefits of WATER INFRASTRUCTURE

In Washington County

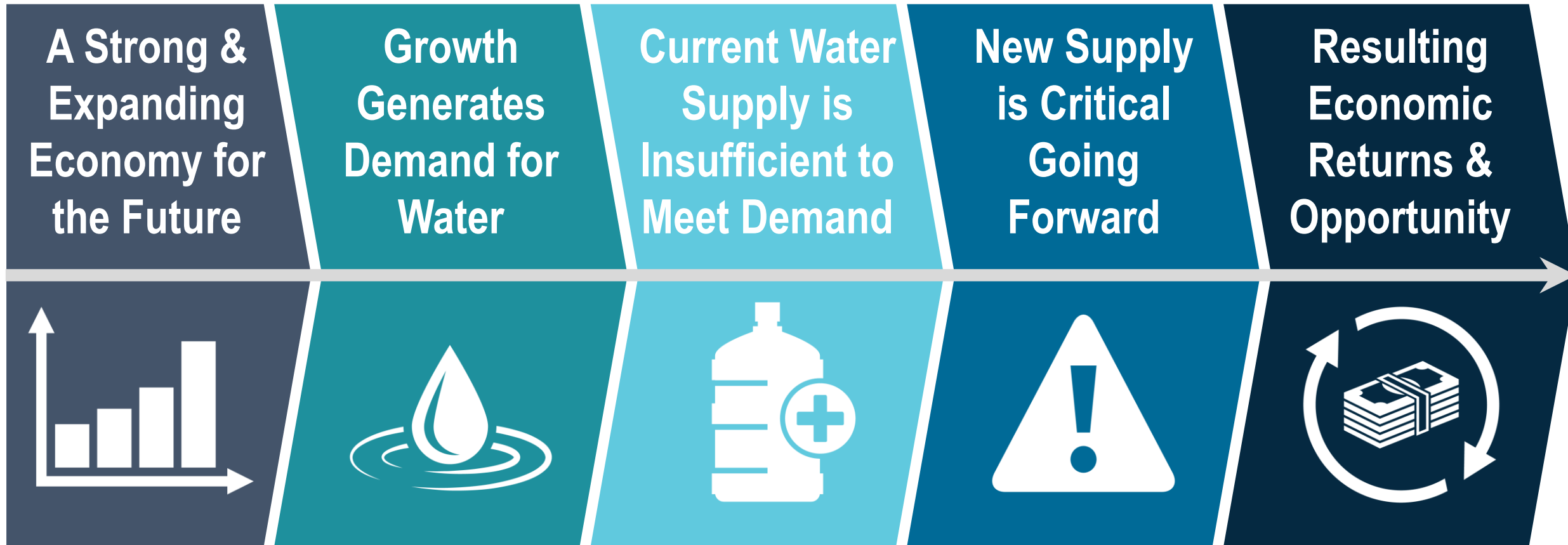




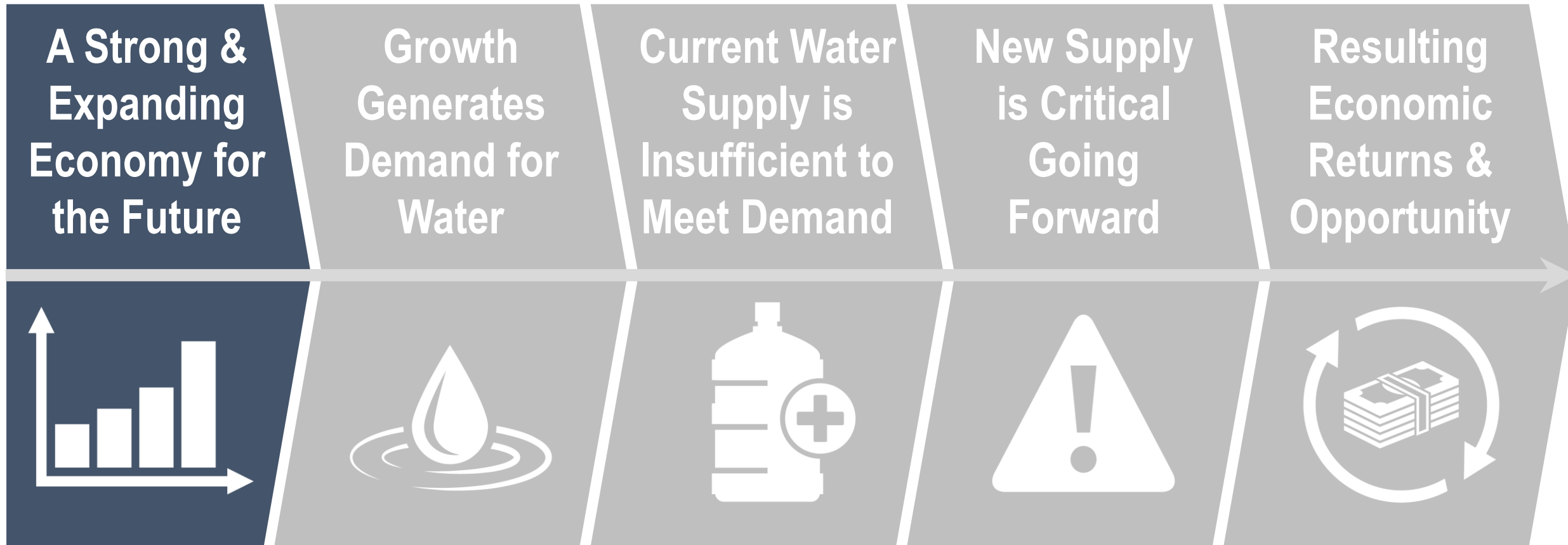
Special Note:

This analysis is a preliminary assessment of Washington County's economy, water supply-demand dynamics and the area's capital infrastructure funding capacity; this is subject to further review and revision.

The Importance of Water Infrastructure Investments

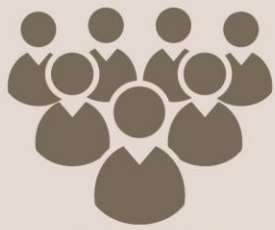


The Importance of Water Infrastructure Investments



SAFE, STABLE AND SUFFICIENT WATER RESOURCES

are vital to protecting Washington County's current and future economy



165,600
RESIDENTS

Fastest Growing County
in Utah

300,000
New Residents
by 2060

65,500
HOUSEHOLDS



74

**LIVABILITY
SCORE**

Above State &
National Average

7TH **BEST PLACE
TO RAISE A FAMILY**

AMONG THE
FASTEST-GROWING
**SCHOOL
DISTRICTS**
IN UTAH



36TH **HIGHEST
APPRECIATION**
in the Nation



**BUILDING
PERMITS UP 27%**

in Single Family Home Construction

COST OF LIVING **98%** of the National Average

54,000 Employees

3.8%



**JOB GROWTH
RATE**



Second Fastest Employment Growth
IN **LEISURE & HOSPITALITY**
in Utah (+22% from '12 to '16)

#1

**LEISURE & HOSPITALITY
EMPLOYMENT GROWTH** IN UTAH
(+28%) Post-Recession ('10 to '14)

16.5%

Of all jobs last year
were sourced to
LEISURE & HOSPITALITY



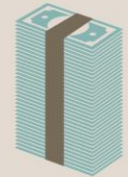
EXPANDING
**HIGHER
EDUCATION &
HEALTHCARE**
SECTORS

24TH

Best small places for
**BUSINESS
& CAREERS**

5,400 **PRIVATE
BUSINESSES**

\$1.9B
in Wages



\$5.1B
in GDP



\$9.3 M
In sales tax
collections last year



\$12.6 B
In property value
last year



\$21.7 M
In property tax
collections last year



\$3.8 B
In personal income tax
collections last year



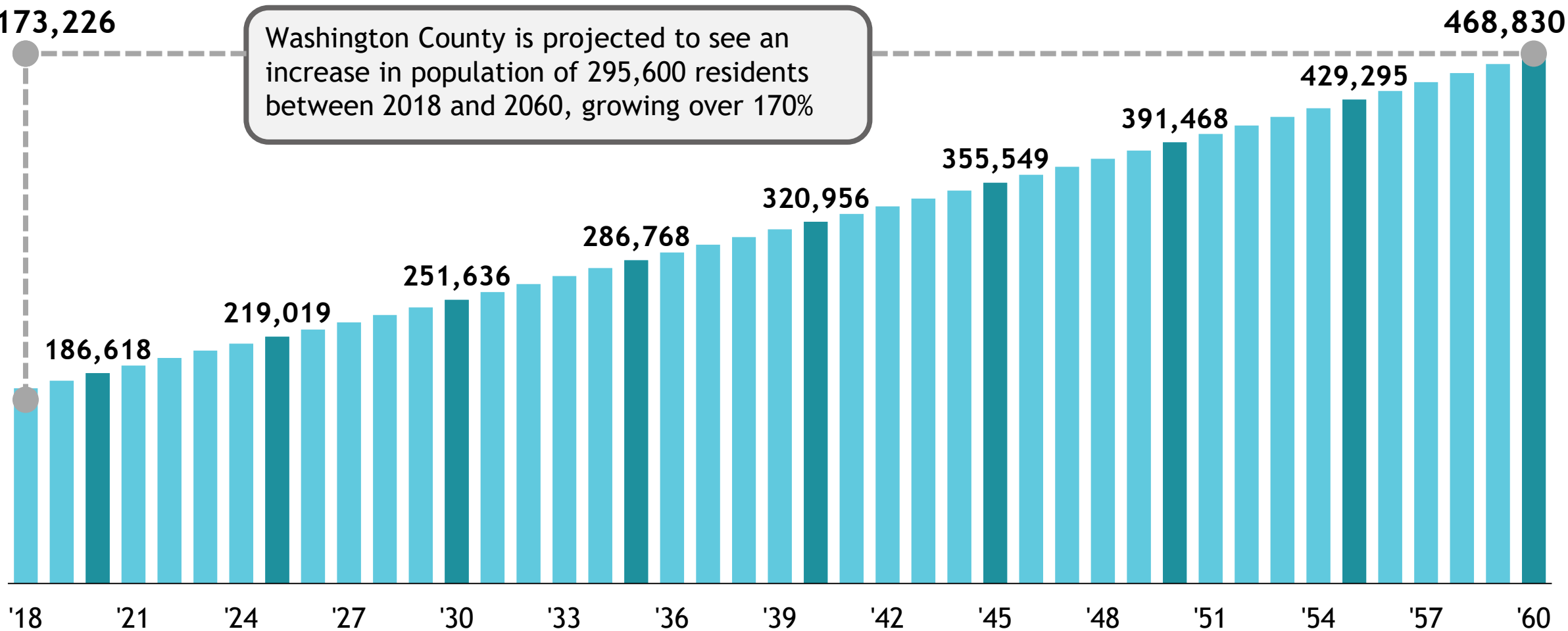
WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT

Benefits of **WATER INFRASTRUCTURE** In Washington County

APPLIED
ANALYSIS

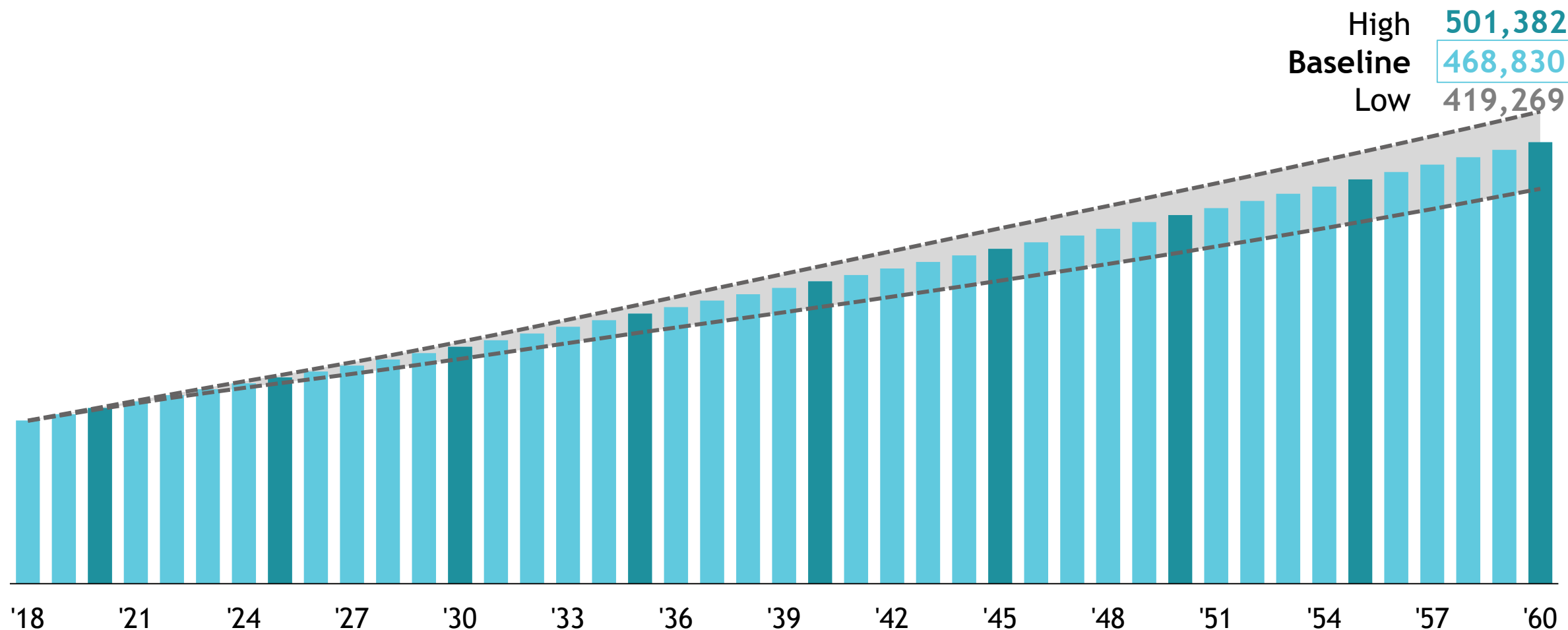


Growth prospects are expected to continue



Source: Kem C. Gardner Policy Institute

There are a range of possibilities, but all point north

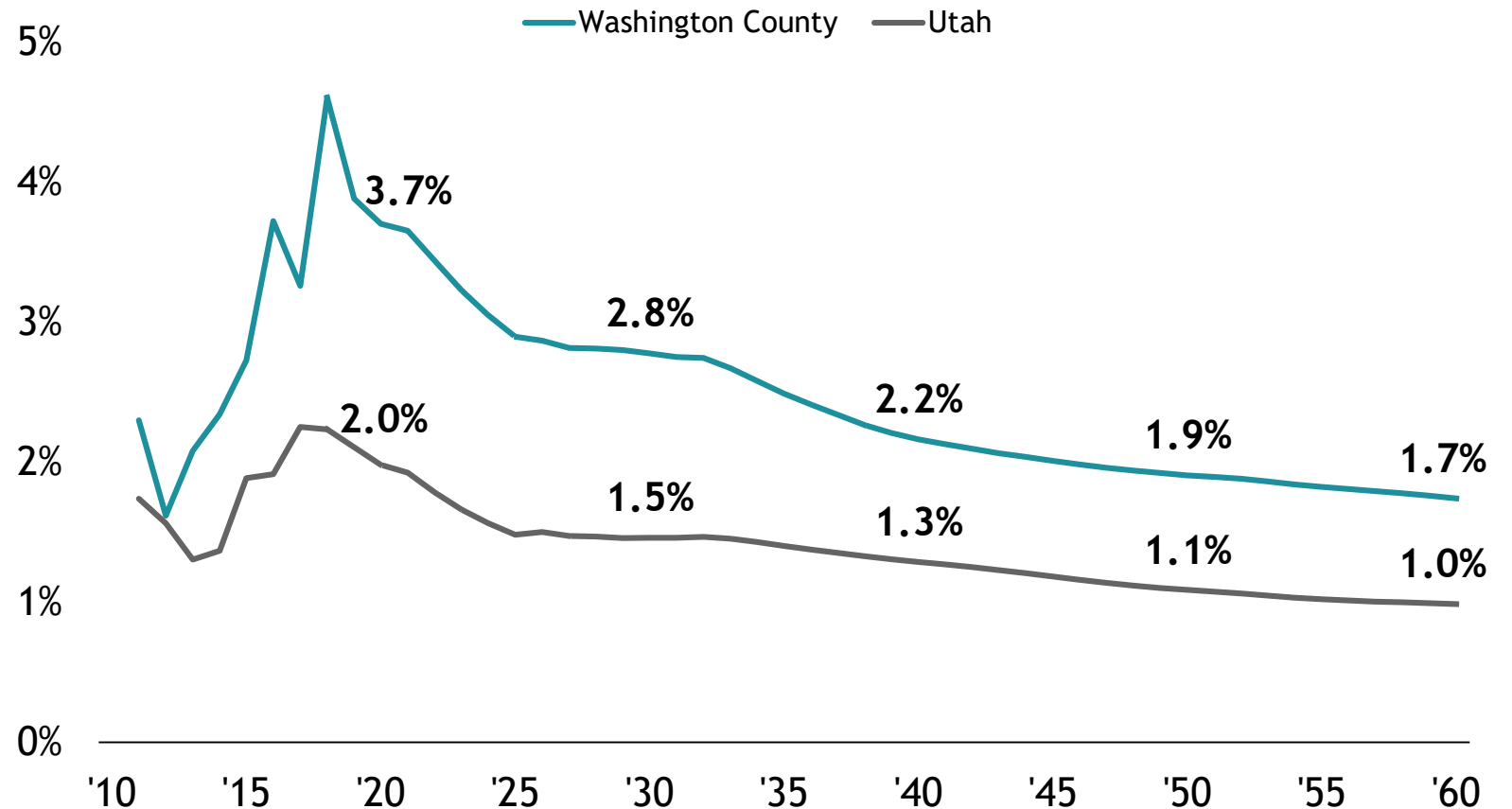


Source: Kem C. Gardner Policy Institute

Washington County is uniquely positioned

Washington County's population growth is expected to outpace statewide growth through 2060.

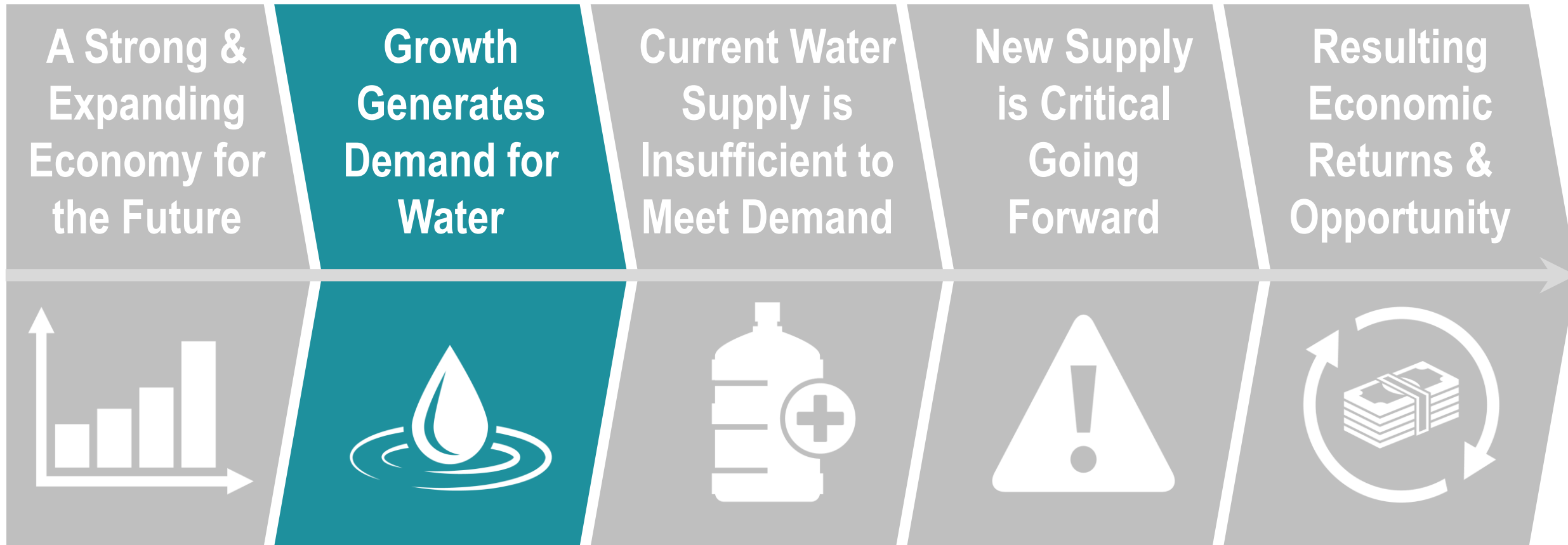
In fact, Washington County is projected to be the state's fastest growing county over the next 40 years.



Washington County has enjoyed the benefits of a strong economy and above-average growth; these trends are expected to continue.

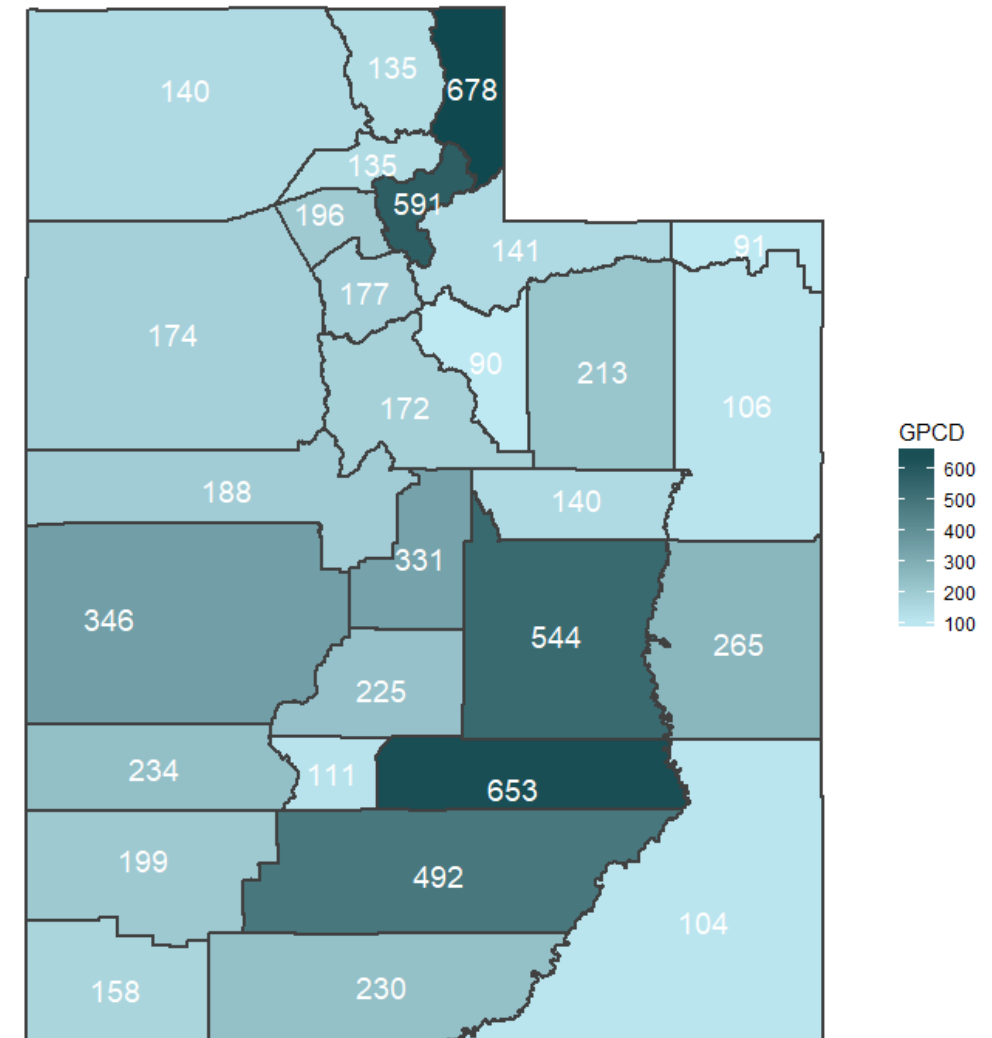


The Importance of Water Infrastructure Investments



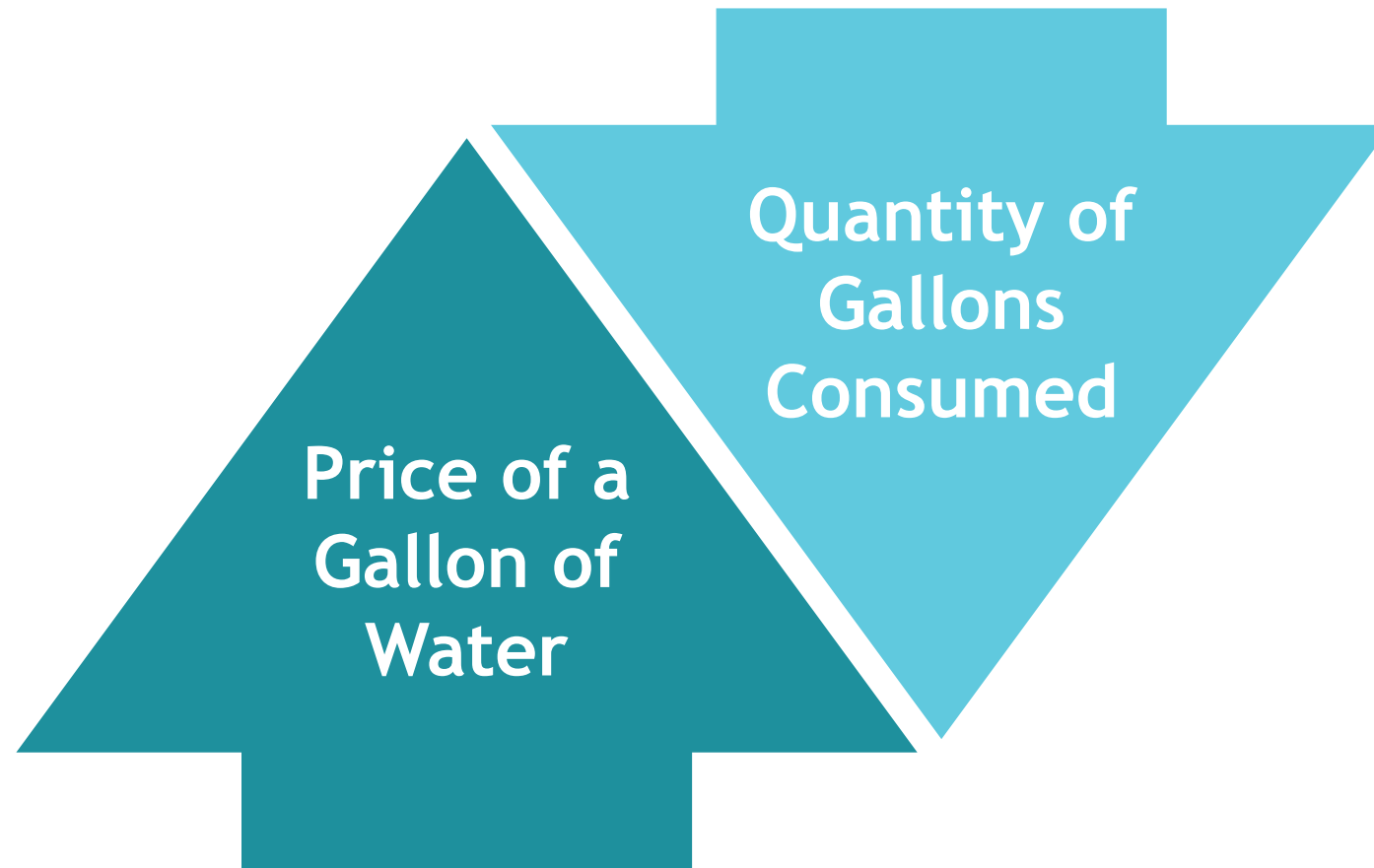
Comparing local residential demand within Utah

In terms of domestic public supply, Washington County reported the fourth lowest per capita per day usage in the state of Utah despite being located in the most arid and hot region of the state according to the latest USGS report.



Source: USGS: Estimated Use of Water in the United States County-Level Data for 2015 | Domestic public supply includes indoor and outdoor use

Price elasticity also plays a role in overall demand

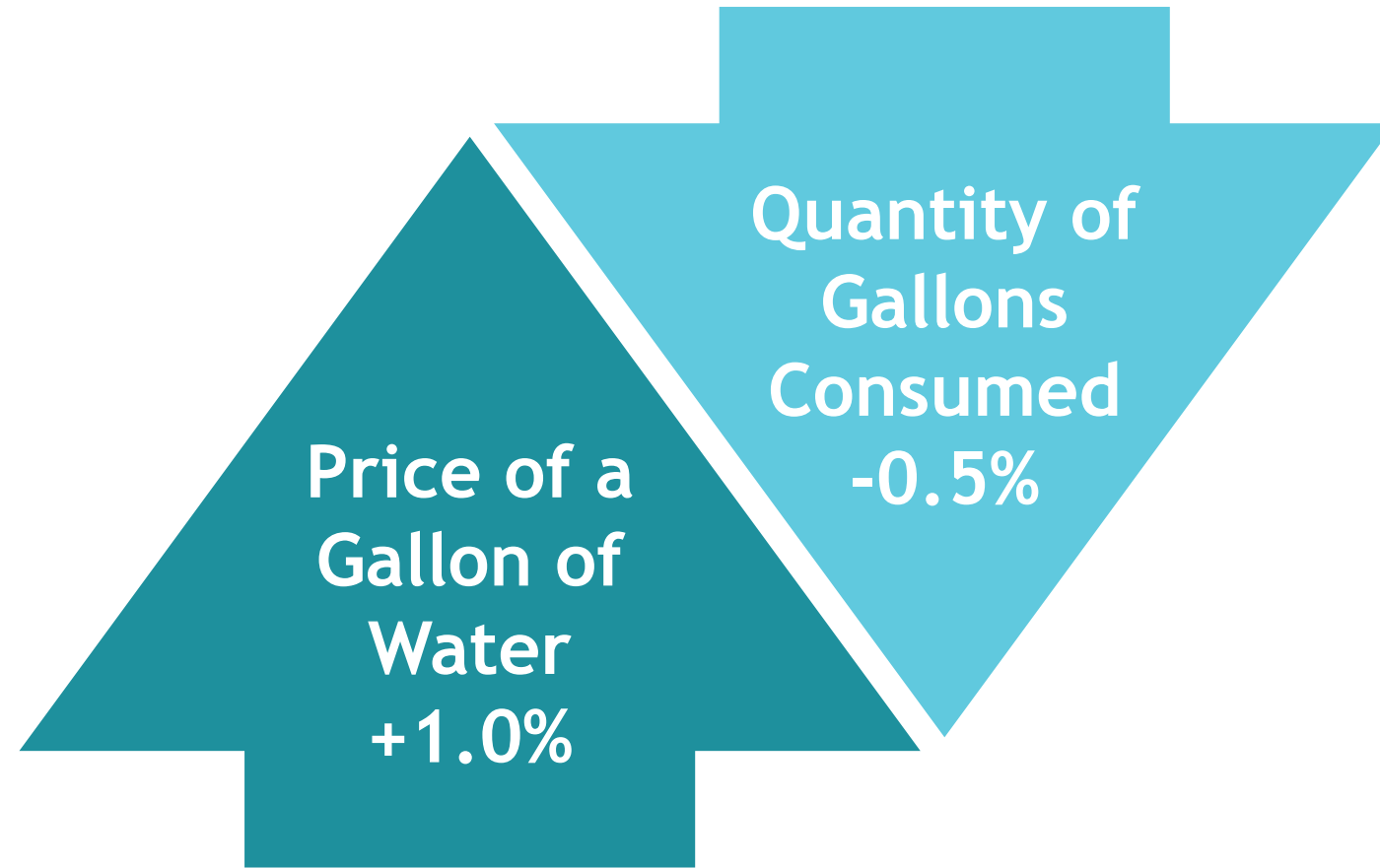


Price elasticity also plays a role in overall demand

Price elasticity of demand is an economic concept that shows the relationship between the price of a good and the quantity demanded of that good.

As the relative price of water increases, the amount of water consumed decreases.

Price elasticity also plays a role in overall demand



More specifically, price elasticity of demand is the percentage change in quantity demanded of a good divided by a 1% change in price of a good

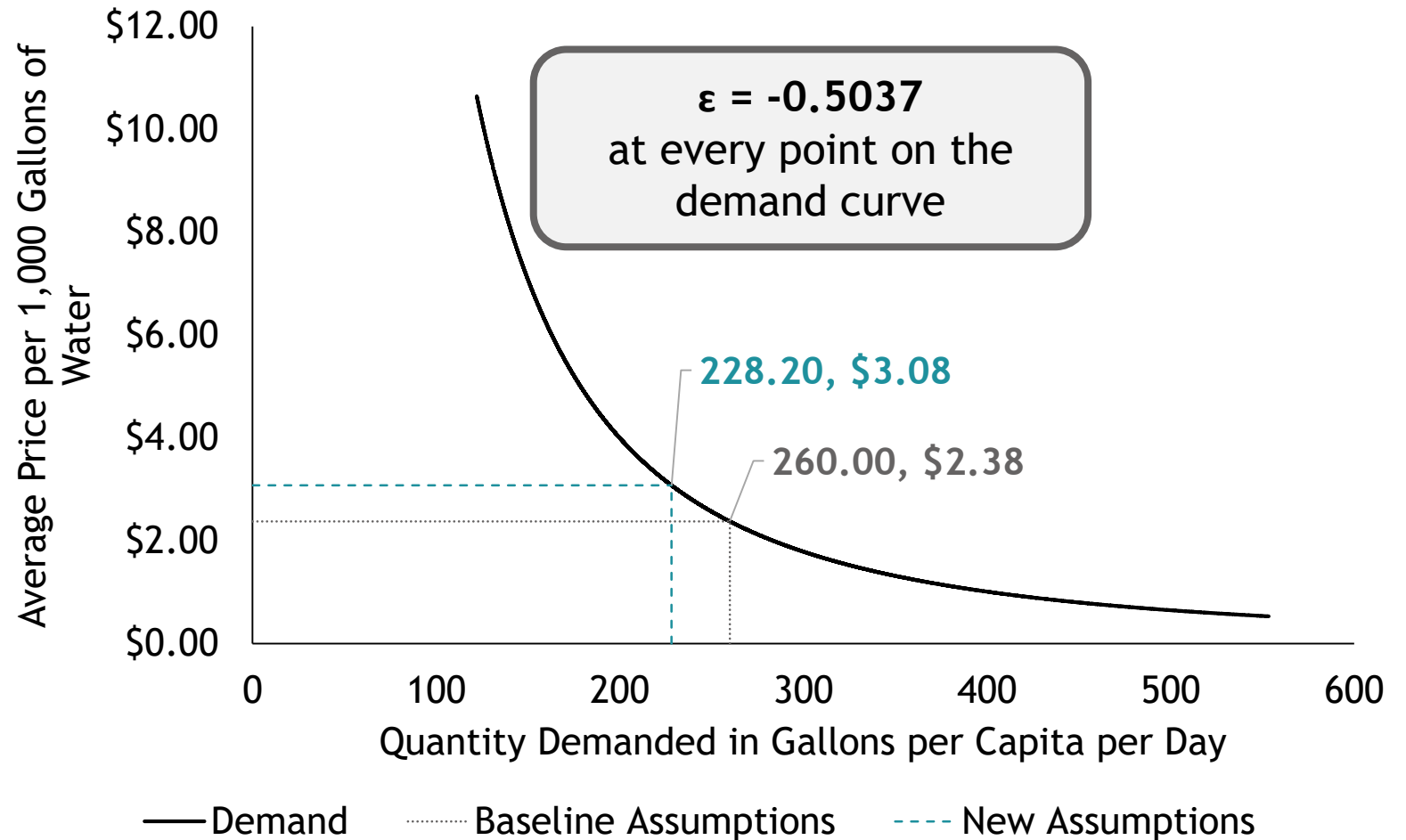
$$\varepsilon = \frac{\Delta \%Q_d}{\Delta \%P}$$

For example, when the price of water rises 1% and the quantity demanded falls by 0.5%, the price elasticity of demand is -0.5 at that combination of quantity and price

Price elasticity also plays a role in overall demand

Key Considerations

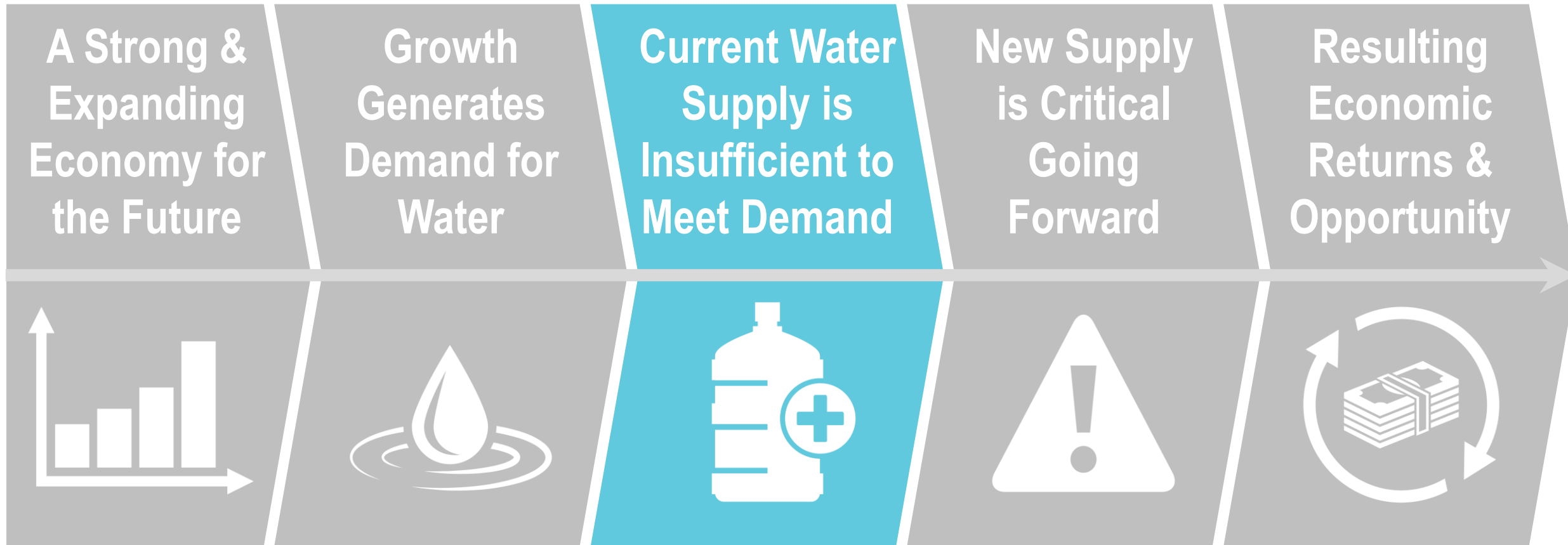
- All other factors held constant
- Inflation-adjusted prices
- Elasticity is held constant *across a range of values*, or across the demand curve
- Average retail price of water is used; consumers react to the average price due to complicated rate structures
- Other factors impact price elasticity



With positive population growth forecasts expected to far outpace the impact of conservation measures and reduced consumption associated with potential water rate increases, incremental demand for water is inevitable.



The Importance of Water Infrastructure Investments



Future demand vs. existing supply

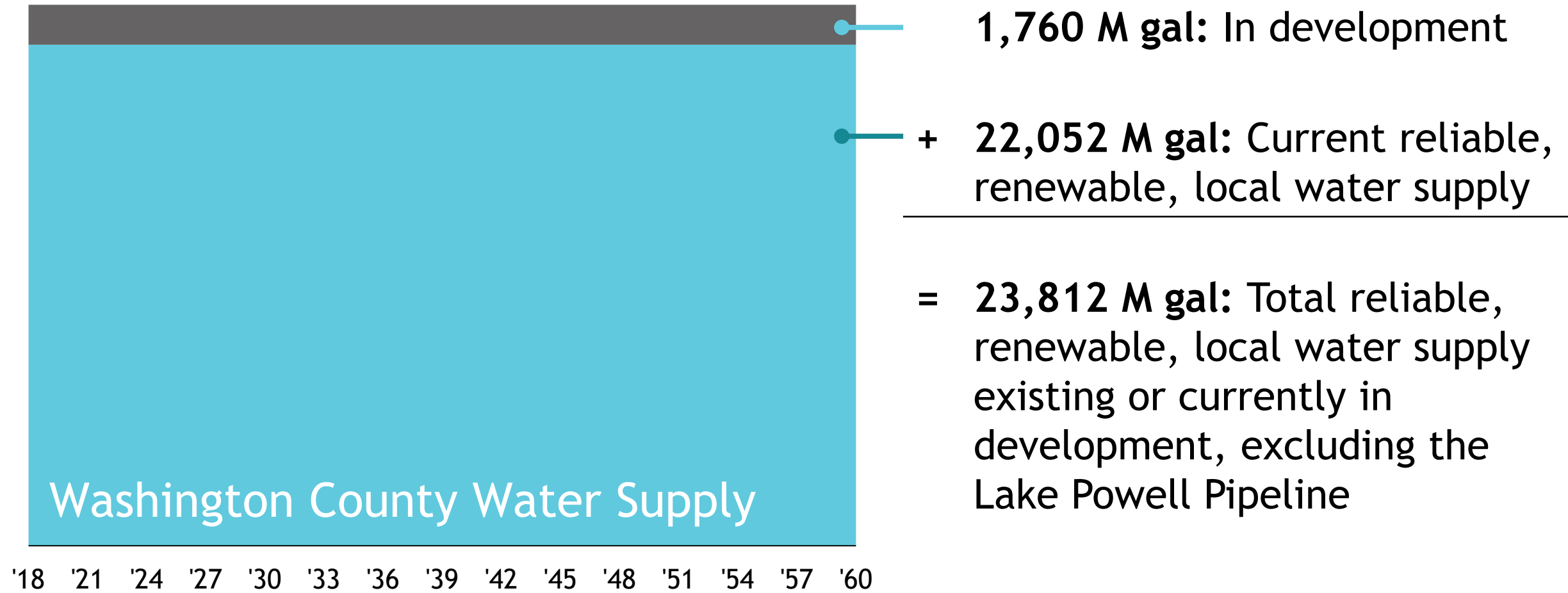


Increase in population
between 2018 and 2060
according to the
Kem C. Gardner Policy Institute



Increase in reliable, renewable water
sources being developed by WCWCD
through 2020 (excluding major additions
like the Lake Powell Pipeline)

Current water supply levels are known

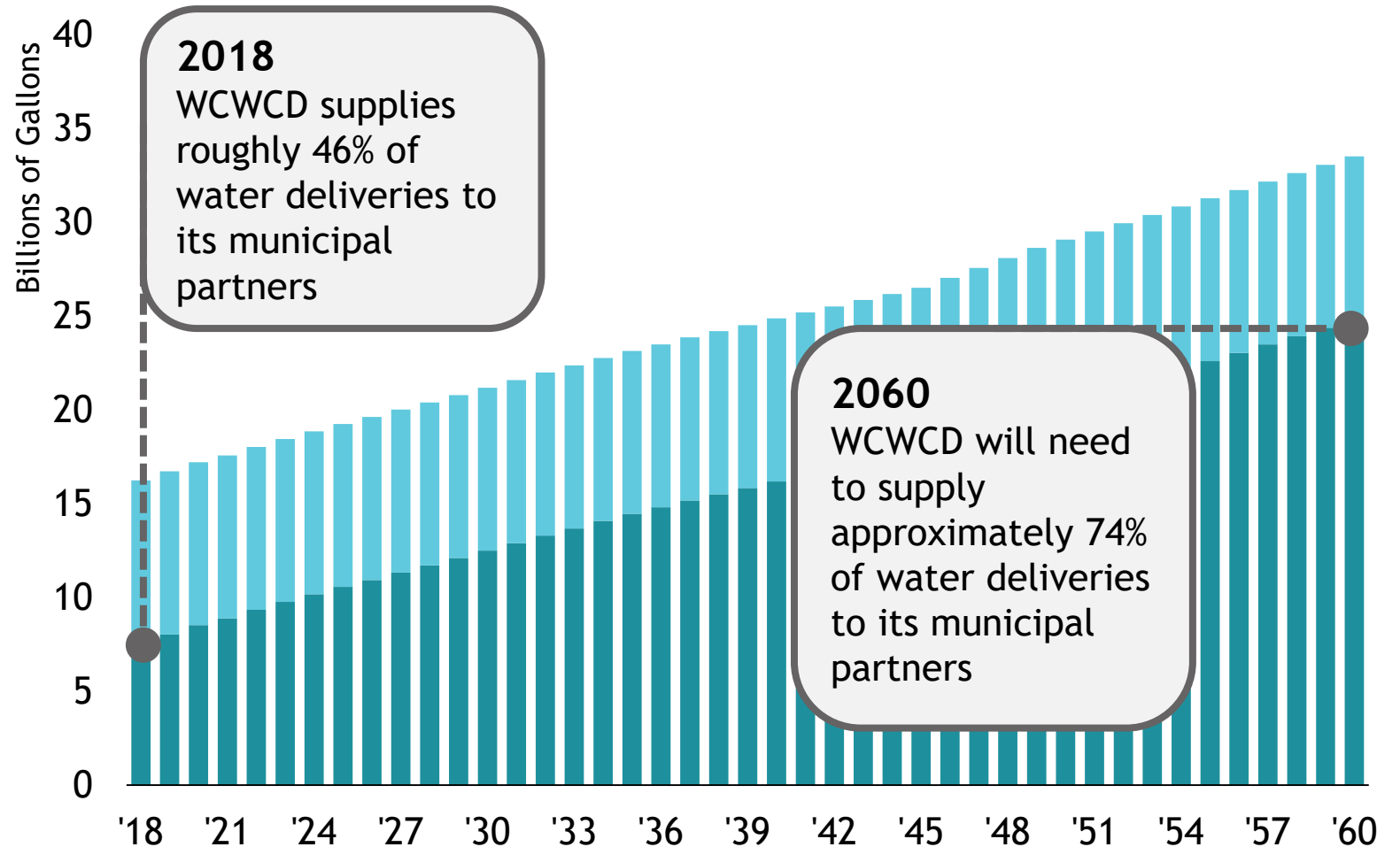


Source: 2017 Impact Fee Facilities Plan

Who provides water within Washington County?

Water Sources

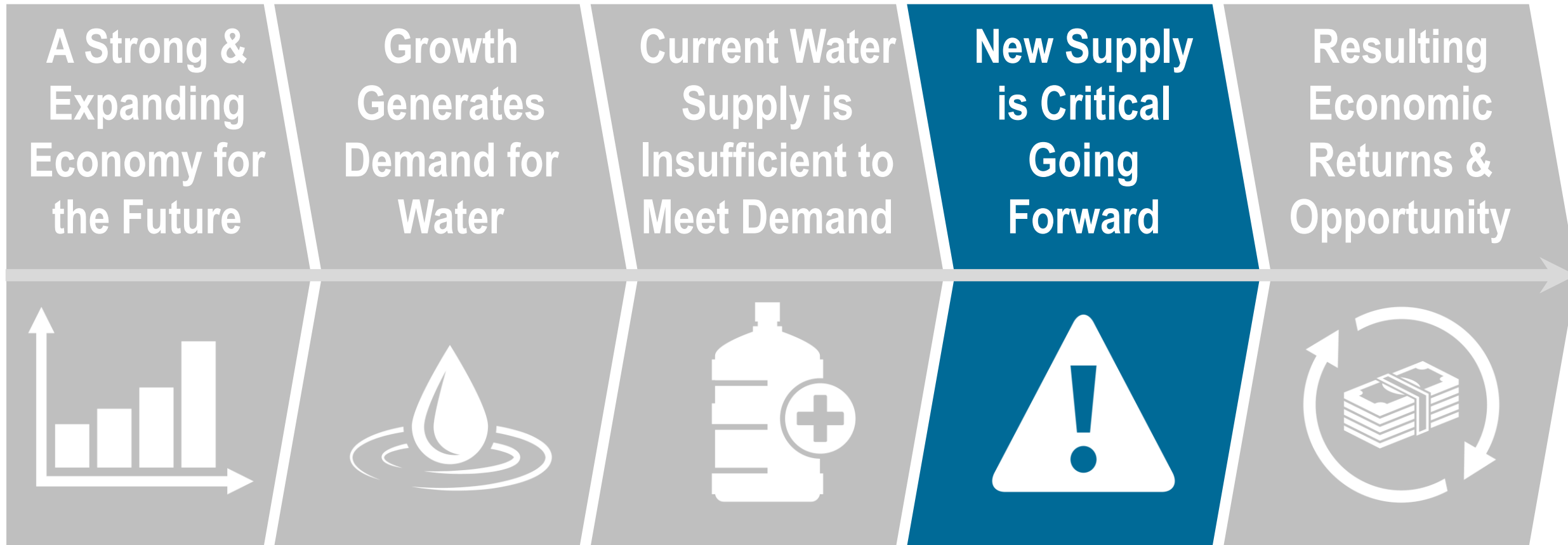
Water rate increases by the WCWCD are only imposed on water provided by WCWCD. The proportion of water supplied by the WCWCD partially determines how much an increase in wholesale rates affects the average retail price of water.





Given current water
resources and expected
demand going forward,
Washington County
faces a shortfall in the
near- to mid-term.

The Importance of Water Infrastructure Investments



Why are additional water resources important?

- + To ensure a safe, stable and sufficient supply of water for existing Washington County residents
- + To keep pace with the expected pace of population and economic growth
- + To protect the region against water resource erosion issues from drought, rising temperatures and other environmental conditions
- + To avoid higher cost alternatives
- + To diversify the region's water resources
- + To use Utah's Colorado River allocation

Planned water resources on the horizon

Project Name	Estimated Project Year	Reliable Yield (Millions of Gallons per Year)
Ash Creek	2019	925
Cottam Wells	2019	212
Diamond Valley Well	2019	130
Lake Powell Pipeline	2024	26,801
Pintura Well	2019	212
Quail Creek WTP - Expansion	2020	-
Quail Creek WTP - Ozone Addition	2019	-
Sand Hollow Arsenic WTP	2018	-
Sand Hollow Regional Pipeline	2018	-
Sand Hollow Wells	2019	978
Sand Hollow WTP	2023	-
Sullivan Wells	2019	244
Total		29,502

Source: 2017 Impact Fee Facilities Plan

The LPP is a key component of the solution



Pipeline Alignment

The proposed alignment for the LPP starts in Lake Powell, mostly follows the Navajo-McCullough Transmission Line south of the Kaibab-Paiute Indian Reservation and terminates in the Sand Hollow Reservoir.

140

Estimated
Miles of
Buried Pipe

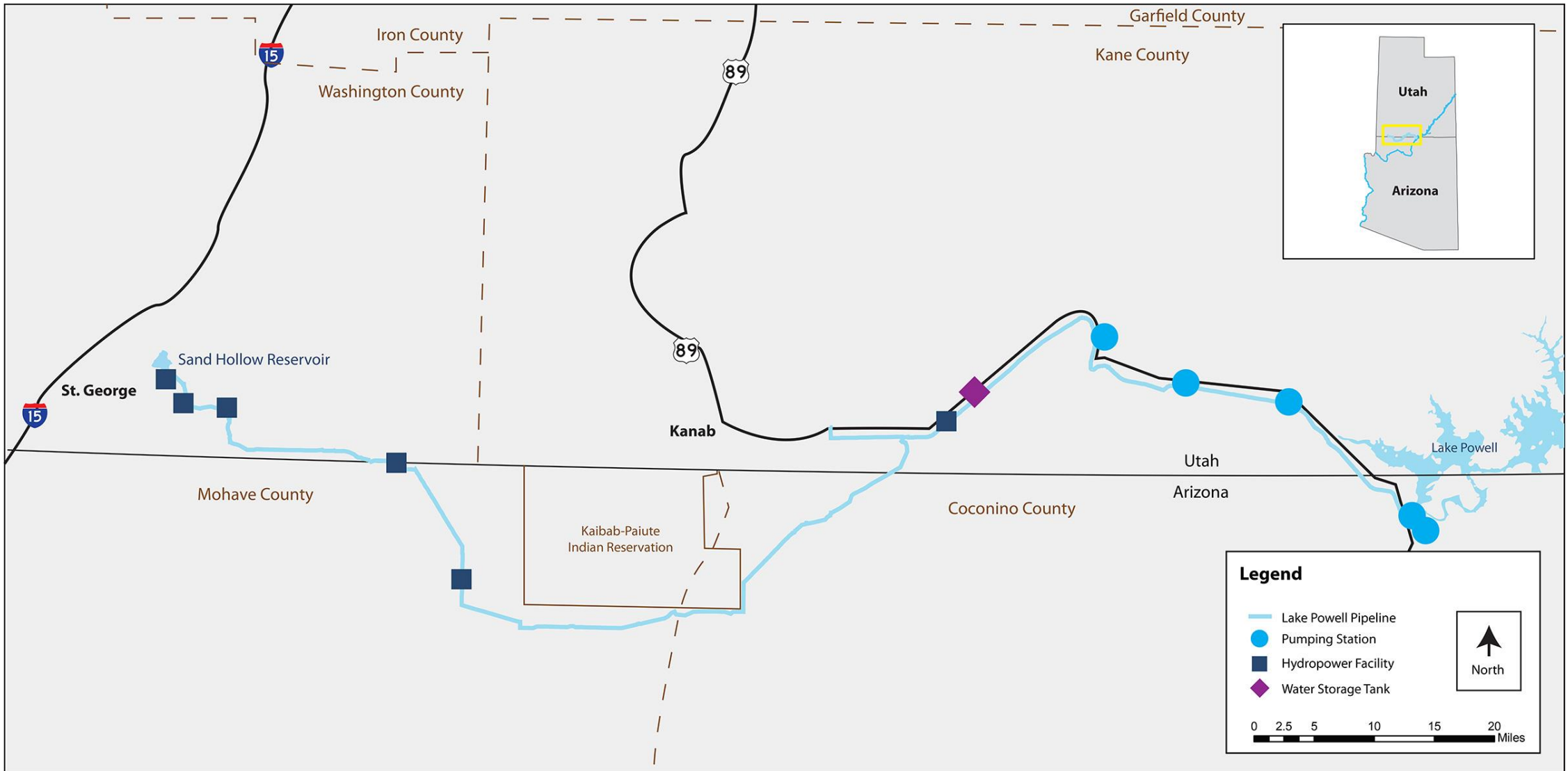
5

Pump
Stations

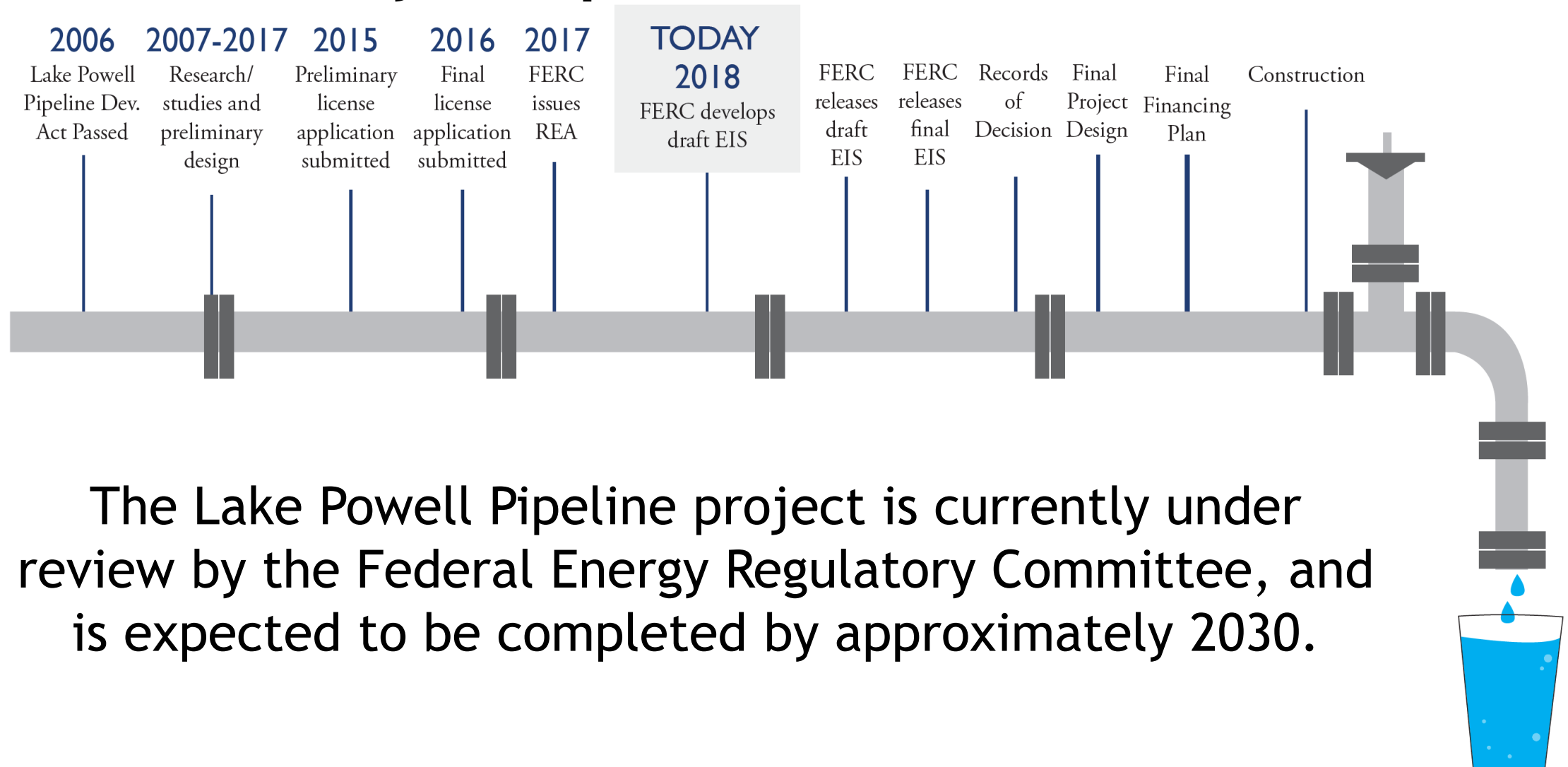
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Hydro-
electric
Generation
Facilities

The LPP is a key component of the solution

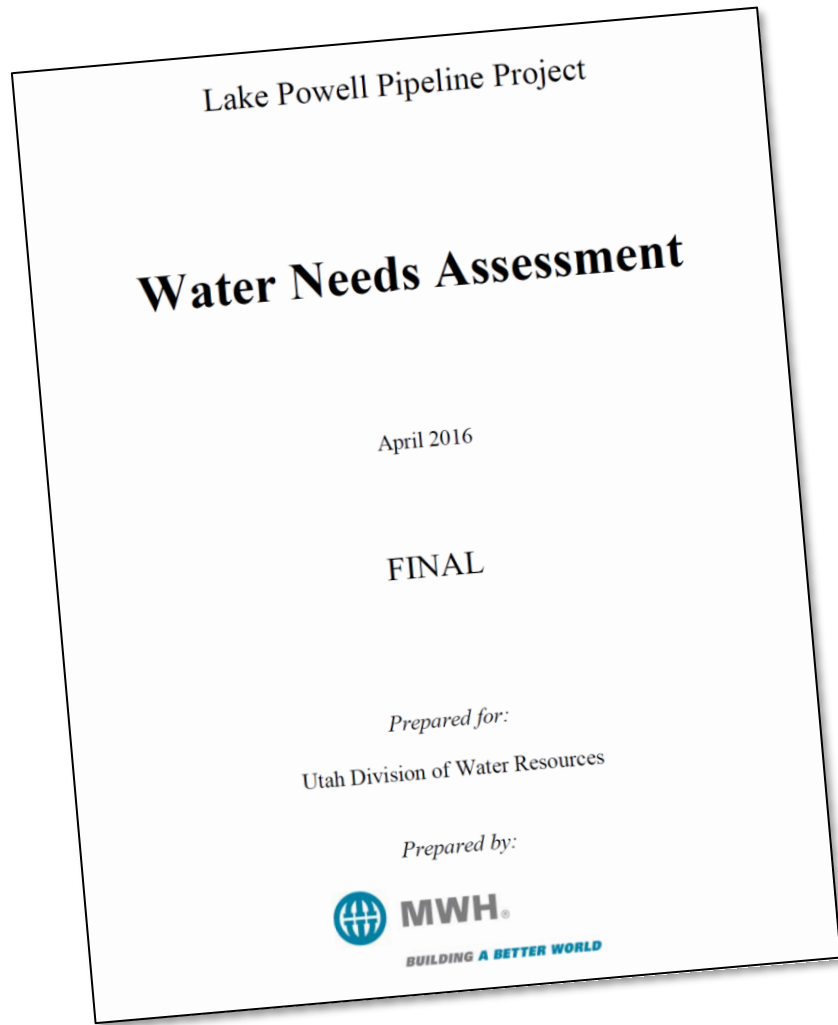


The LPP is a key component of the solution



The Lake Powell Pipeline project is currently under review by the Federal Energy Regulatory Committee, and is expected to be completed by approximately 2030.

The importance and practicality of the LPP



“the proposed [Lake Powell Pipeline] project would import higher quality water much more economically and would avoid the environmental impacts associated with [reverse osmosis] treatment.”

Source: Lake Powell Pipeline Project Water Needs Assessment, April 2016, MWH ((at section 2.7) and (at section 4.2.2))

Limited alternatives to address the challenge

Planning and Innovation

The future is inherently uncertain. Thoughtful planning in development codes and economic development initiatives will help Washington County prepare for whatever the future holds. The region must be open to innovation of increasing the efficiency of limited resources like water.



Conservation

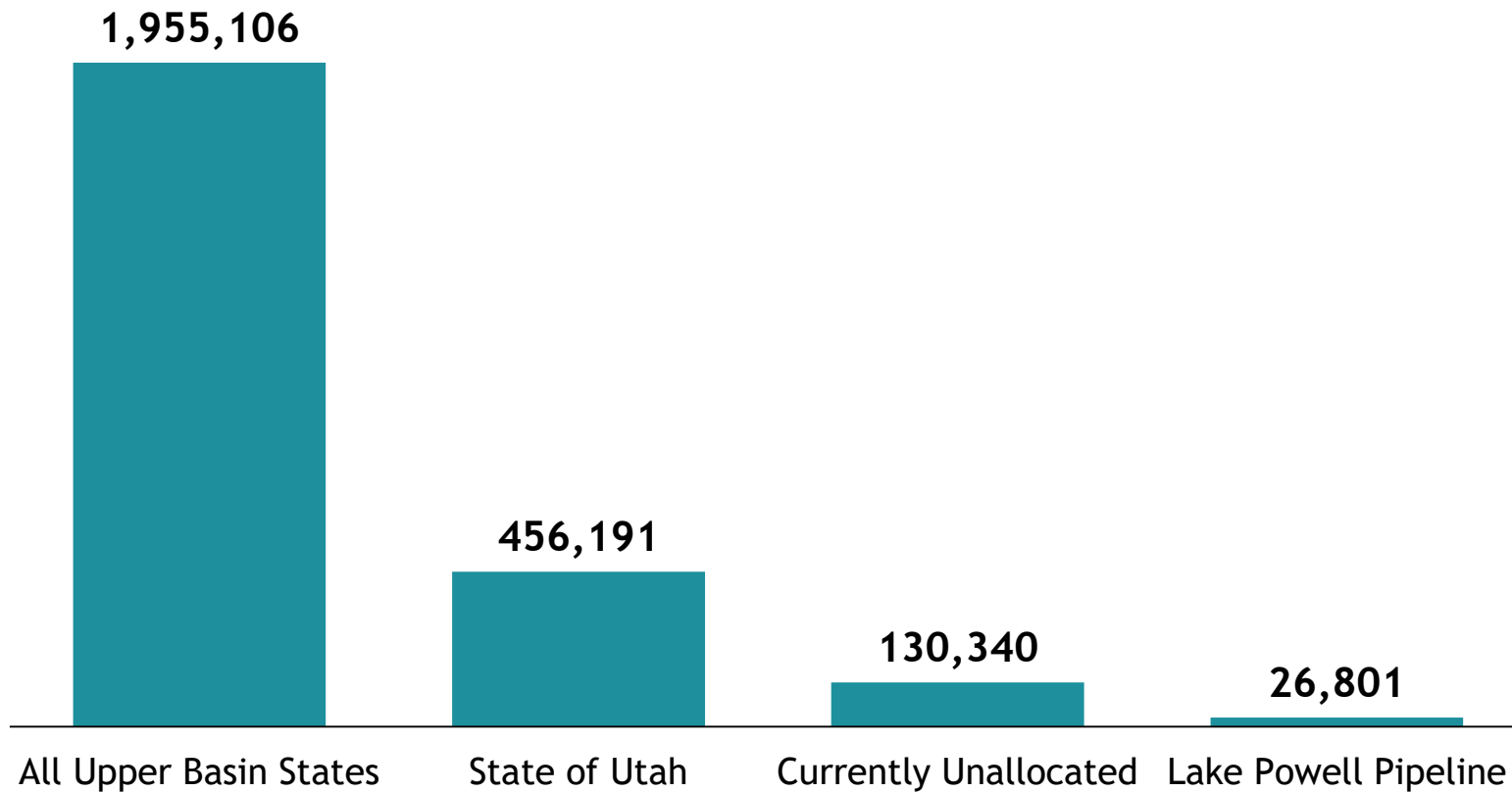
Washington County will strive to exceed conservation targets where it is economical to do so. The current estimated conservation target is 40 to 45 percent.

Water Resource Development

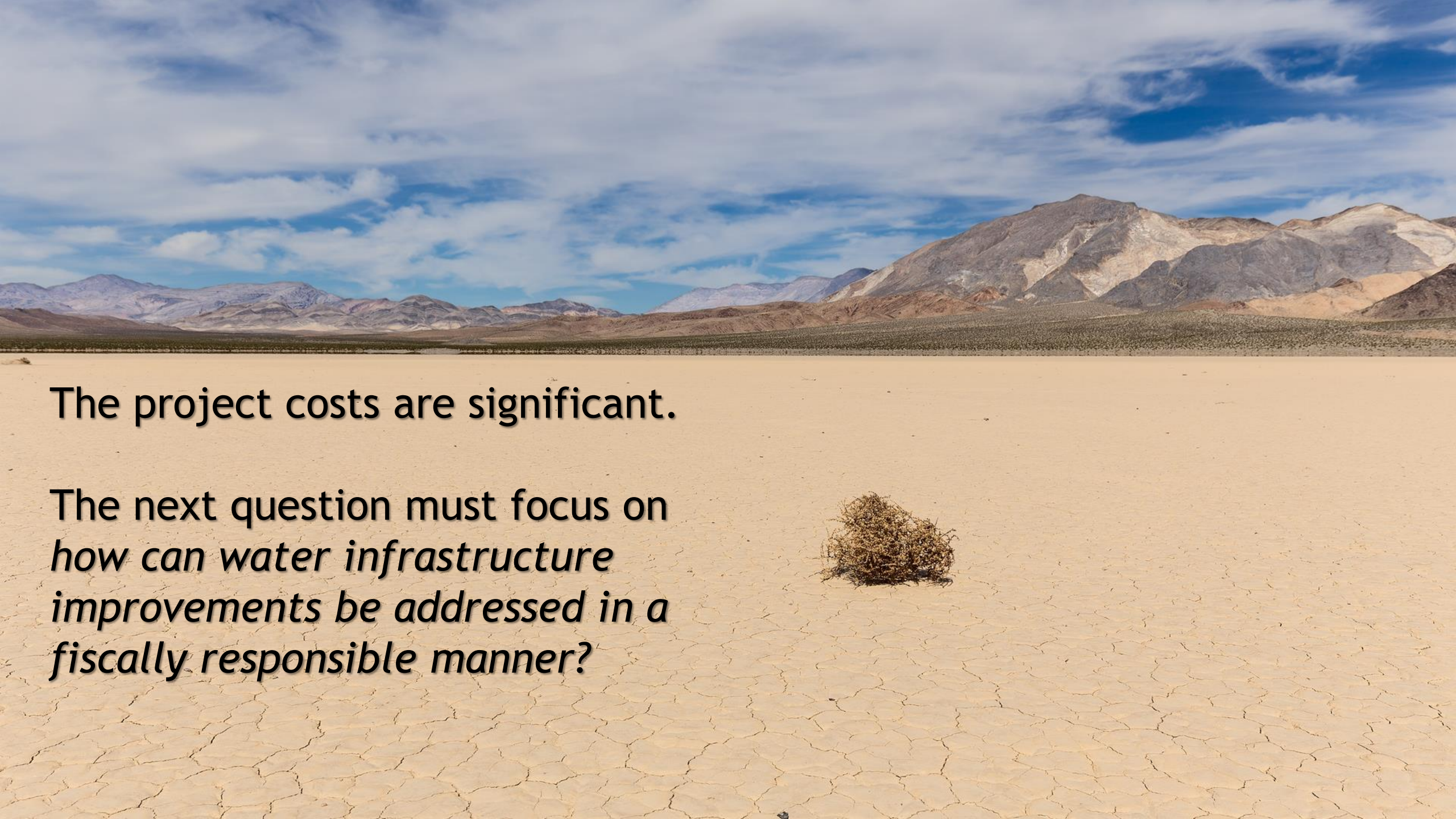
The Lake Powell Pipeline and other resource development projects will add over 100,000 acre feet of new water resources, diversifying the region's water portfolio and securing Utah's Colorado River Water Rights.

Putting the LPP into perspective

Colorado River Water Allocations
Millions of Gallons



The Lake Powell Pipeline would utilize about 6% of Utah's Colorado River annual reliable supply, 130 billion gallons of which is currently unused.



The project costs are significant.

The next question must focus on
*how can water infrastructure
improvements be addressed in a
fiscally responsible manner?*

Funding alternatives considered

There are a range of potential scenarios to funding water infrastructure

Impact Fees

0%
25%
50%
75%
100%

Water Rates

50%
35%
25%
15%
0%

Property Taxes

50%
40%
25%
10%
0%



Funding alternatives considered

There are a range of potential scenarios to funding water infrastructure

Impact Fees

75%

Water Rates

15%

Property Taxes

10%

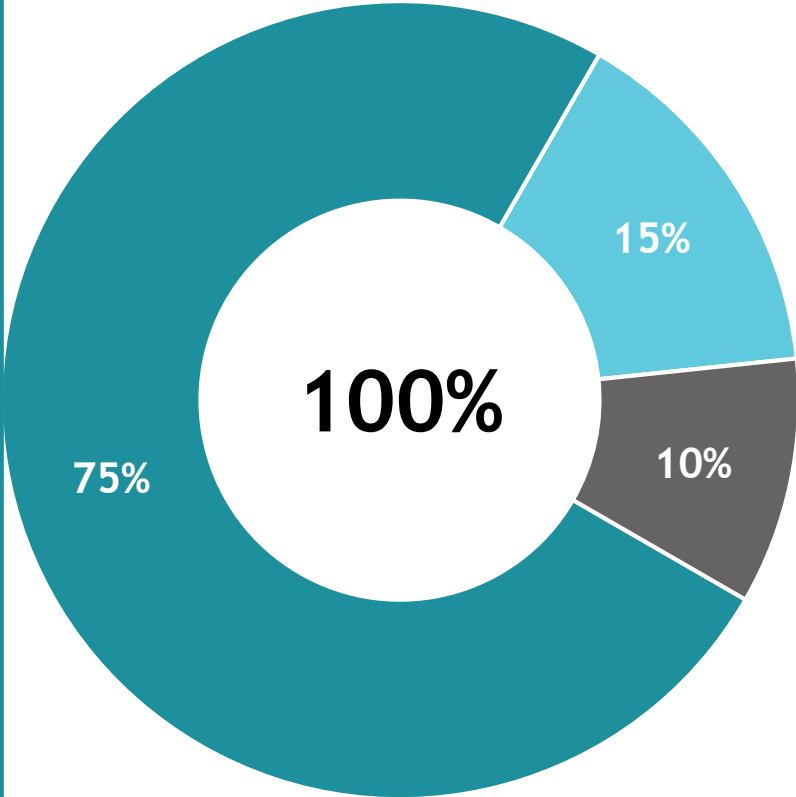


Special Note: Total Water Use \neq Revenue-Generating Deliveries

Funding water infrastructure projects

WCWCD funds its infrastructure projects, including acquisitions of Lake Powell Pipeline water, using impact fees, water rates, and property taxes.

Impact Fee
Impact fees continue increasing \$1,000 annually until the fee revenue will generate 75 percent of the cost of district capital projects. From that point forward, impact fees would be adjusted annually by the cost of inflation, currently estimated at 2.4 percent.

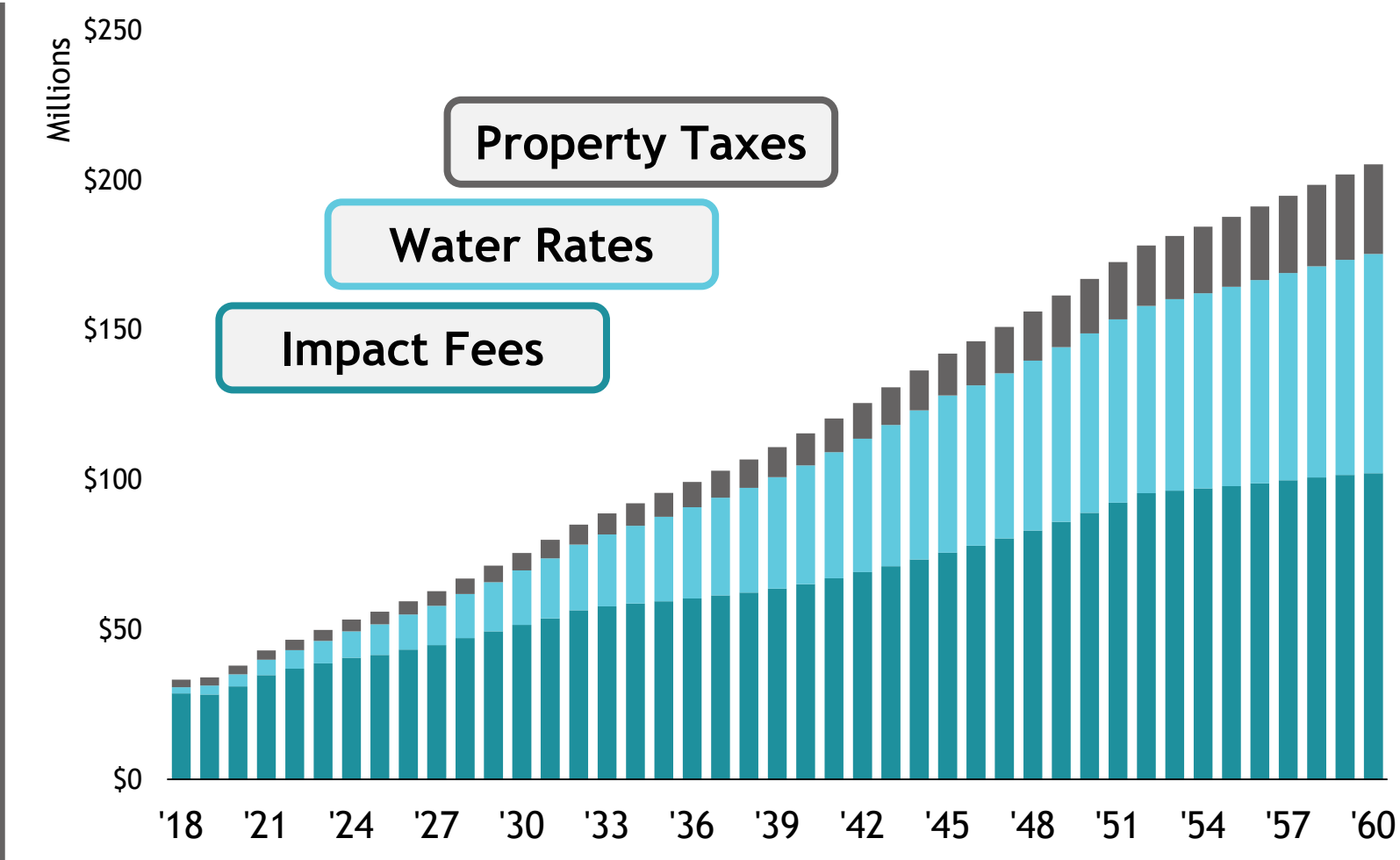


Water Rate
Increase wholesale water rates by \$0.10 per 1,000 gallons each year to \$3.00 per 1,000 gallons. The full \$3.00 rate increase would be realized in 2045.

Property Tax
Phase-in WCWCD tax rate of 0.000278 over a 10-year period to bring the rate to 0.001 (est. 2027).

Funding capacity for water infrastructure projects

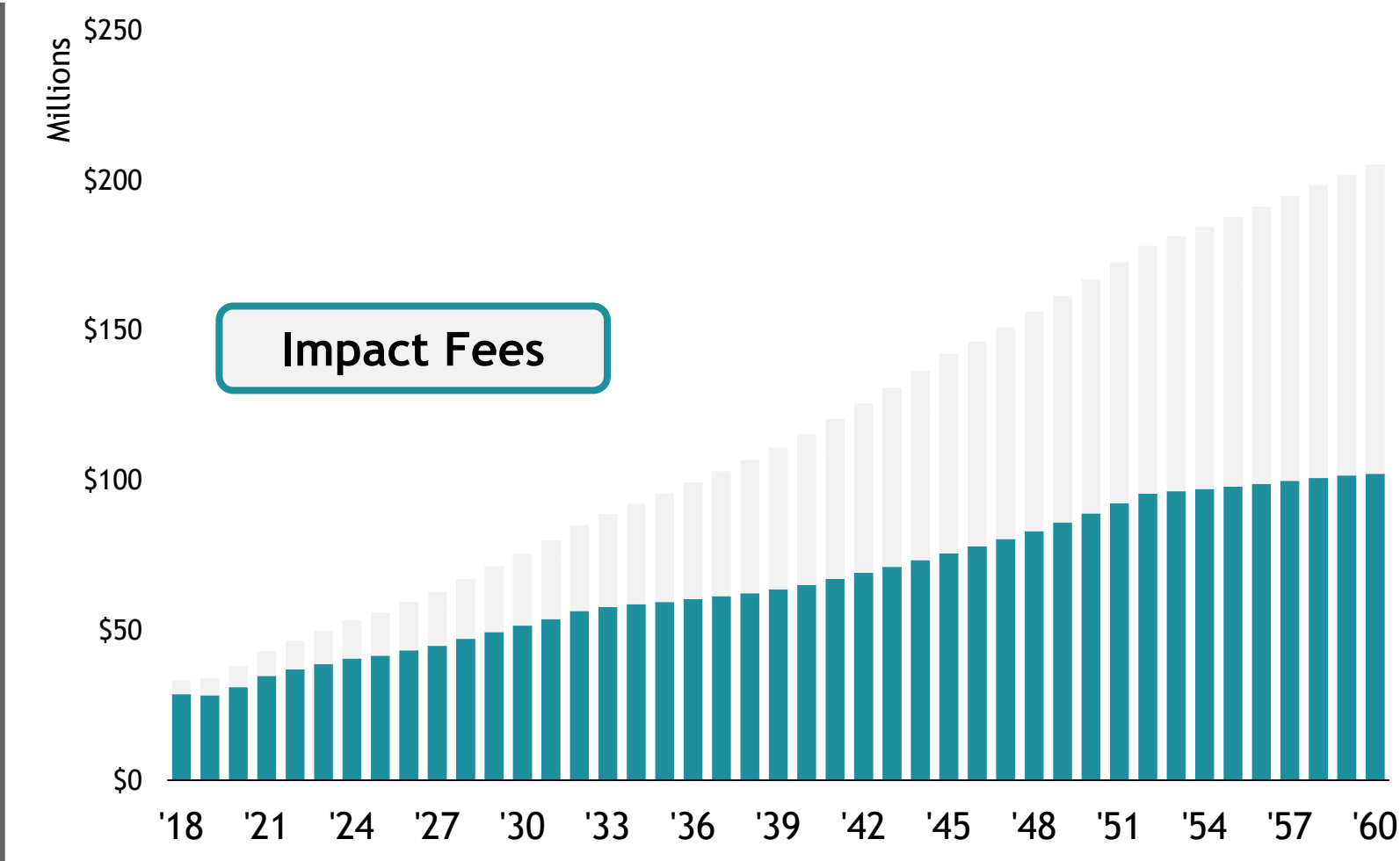
WCWCD funds its infrastructure projects, including acquisitions of Lake Powell Pipeline water, using impact fees, water rates, and property taxes.



Funding capacity for water infrastructure projects

\$2.9 B

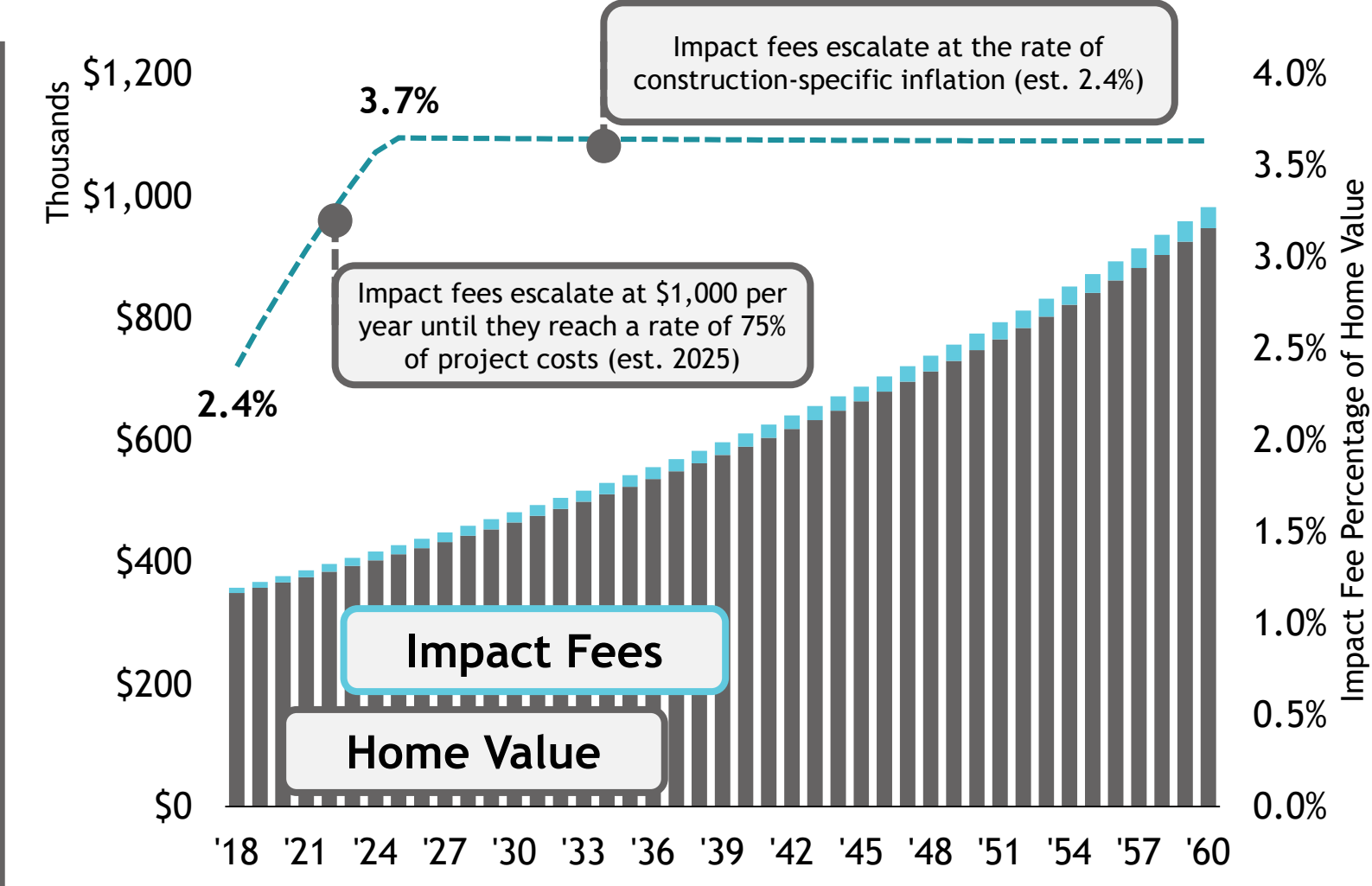
Impact fees have the capacity to fund almost \$2.9 billion between today and 2060



Impact fees on a typical housing unit

Impact Fees

Current WCWCD impact fees are approximately 2.4% of the price of a new home in Washington County. This ratio will peak in in 2025 at 3.7% of the home value newly constructed homes.



Funding capacity for water infrastructure projects

3.62%

Average impact fee to
new home price ratio*

$$\begin{array}{rcl} \$21,744 & \text{Average Impact Fee} \\ \times 132,000 & \text{Additional ERU} \\ \hline \$2.9 \text{ B} & \text{Total Capacity} \end{array}$$

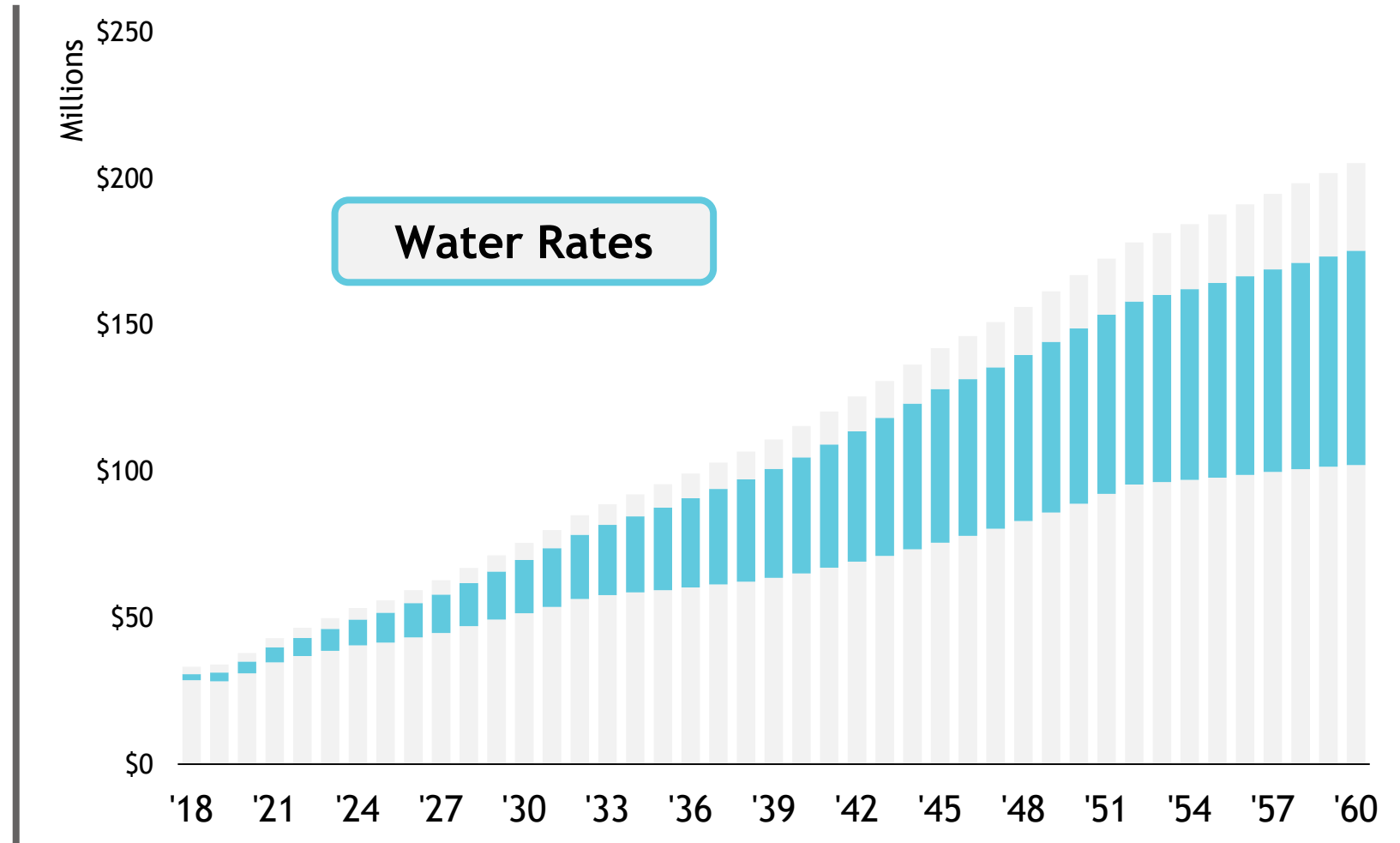
$$\begin{array}{rcl} \$601,200 & \text{Average New Home} \\ \div \$21,744 & \text{Average Impact Fee} \\ \hline 3.62\% & \text{Fee to Home Value} \end{array}$$

Assumes \$350,000 new home price today and 2.4% inflation rate, based on the PPI-Construction materials index

Funding capacity for water infrastructure projects

\$1.6 B

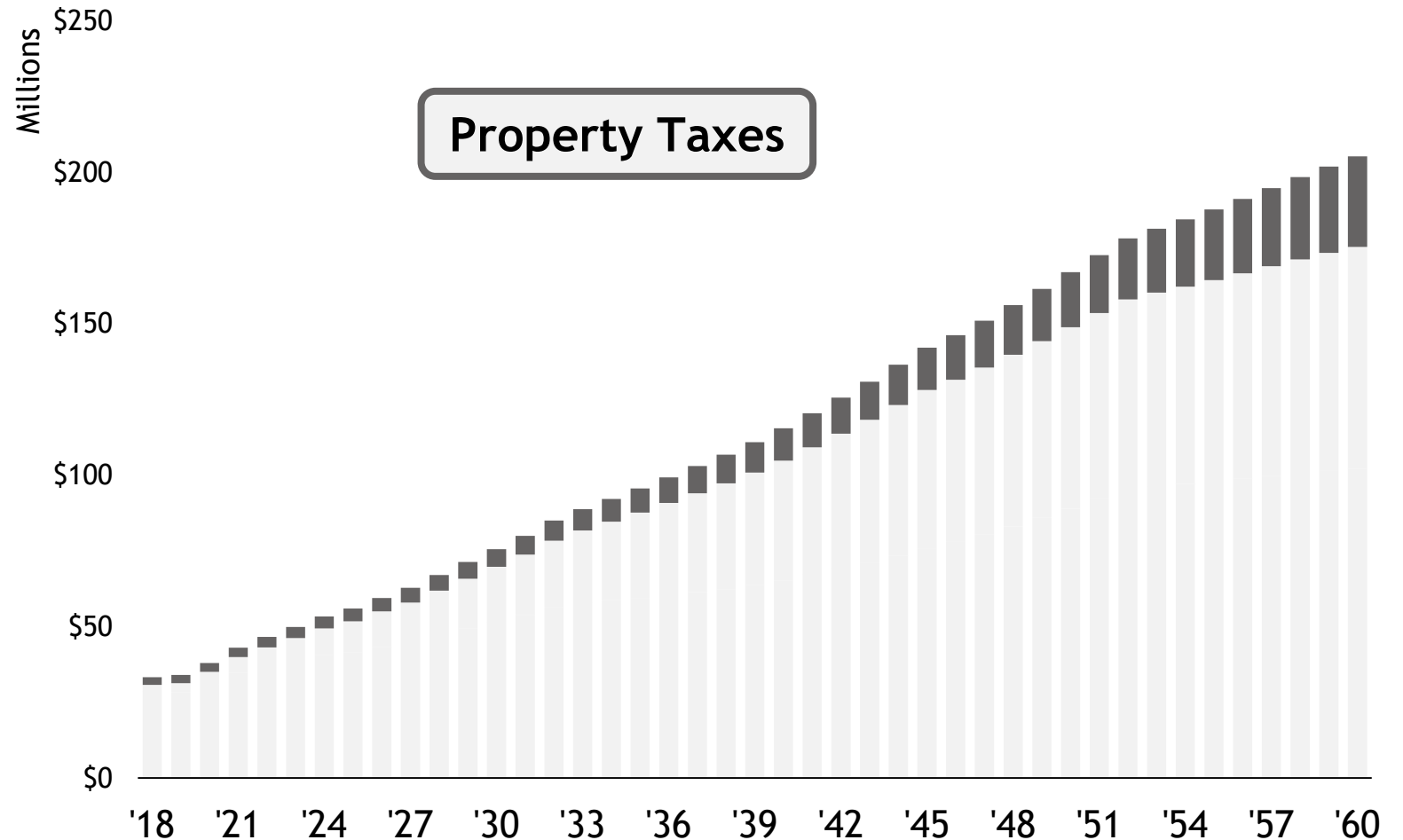
The WCWCD wholesale rate capital fund contributions have the capacity to fund almost \$1.6 billion between today and 2060



Funding capacity for water infrastructure projects

\$0.5 B

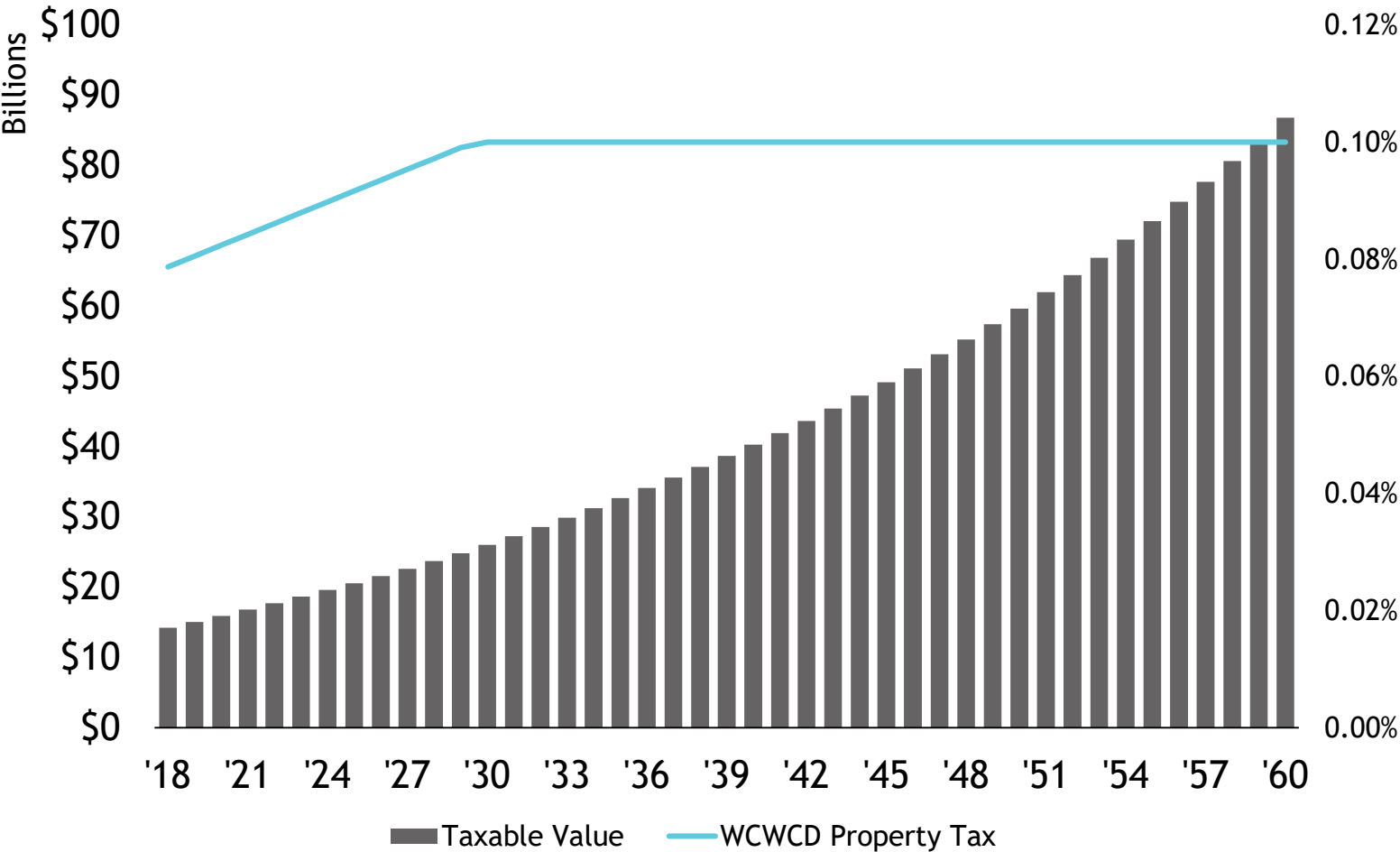
The WCWCD portion of property taxes in Washington County have the capacity to fund \$522 million between today and 2060



Funding capacity for water infrastructure projects

6.10x

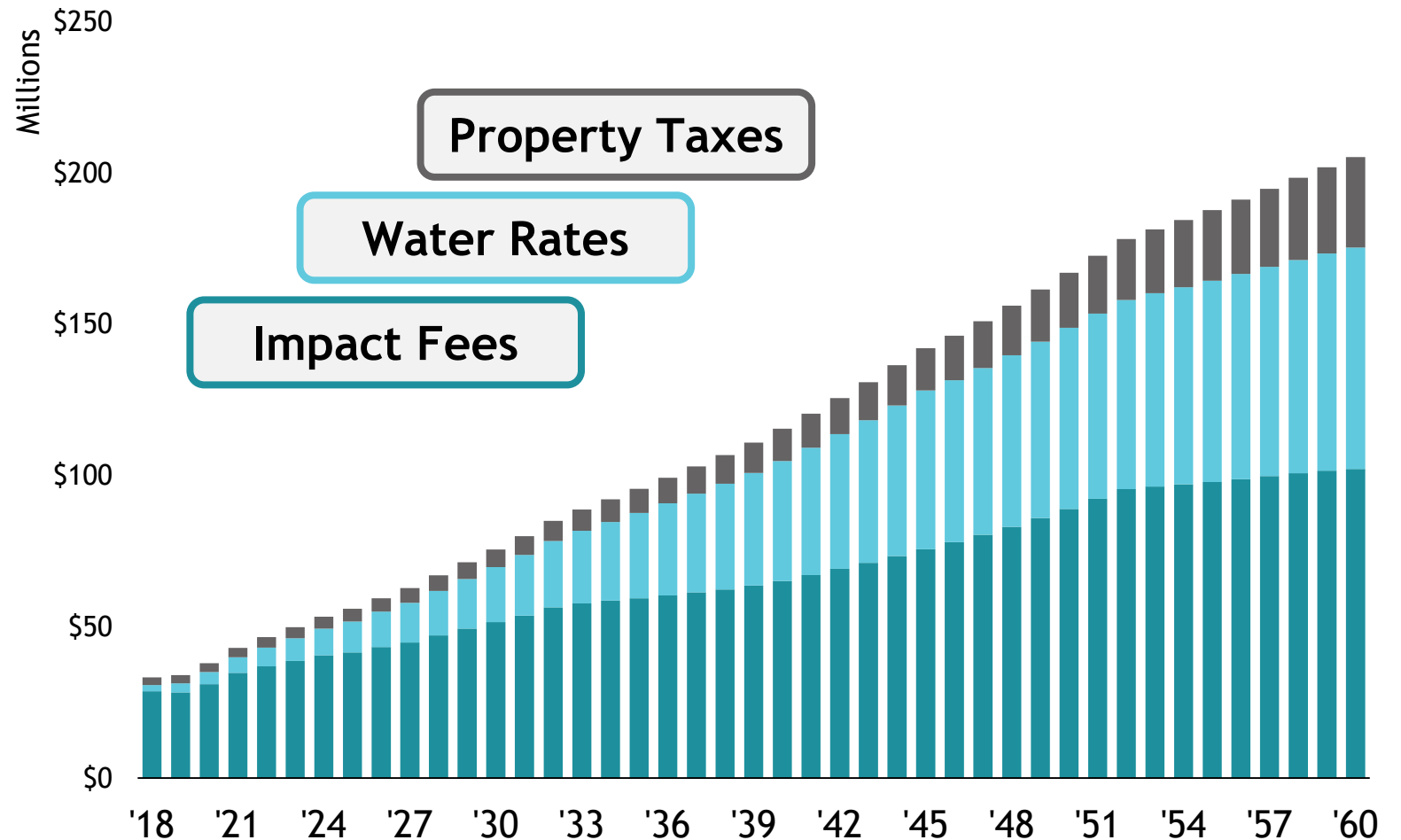
Taxable value increase
from today through
2060



Funding capacity for water infrastructure projects

\$5.0 B

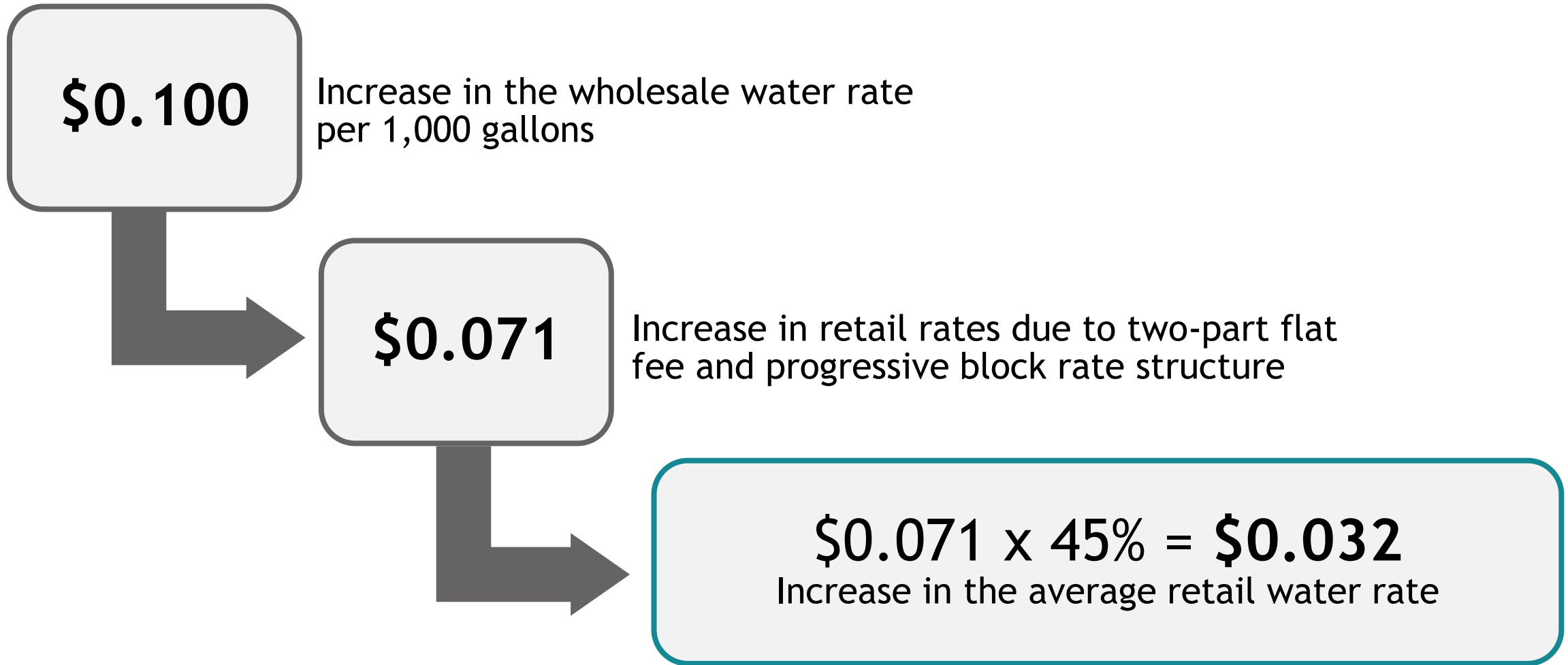
The total capacity of all three funding sources available would fund more than \$5 billion over the next 42 years



Funding water infrastructure projects



Water rate impact: Wholesale vs. retail rates



Water rate impact: Wholesale vs. retail rates

Water Rate Structure

Water rates in Washington County (St. George City) are structured in increasing blocks with a flat fee charged for every period. This means that an increase in wholesale water rates will translate to a smaller increase in retail water rates.

Rate Structure		Month	Jan.	Feb.	Mar.	Apr.
		Use (x 1,000)	18.28	17.50	23.77	33.09
Flat Fee (includes first 5,000 Gallons)	\$24.72	Flat Fee	\$24.72	\$24.72	\$24.72	\$24.72
\$1.18	5,000 to 10,000		\$5.90	\$5.90	\$5.90	\$5.90
\$1.30	10,000 to 15,000		\$6.50	\$6.50	\$6.50	\$6.50
\$1.40	15,000 to 20,000		\$4.59	\$3.50	\$7.00	\$7.00
\$1.51	20,000 to 25,000		\$0.00	\$0.00	\$5.69	\$7.55
\$1.62	25,000 to 30,000		\$0.00	\$0.00	\$0.00	\$8.10
\$1.73	30,000 to 35,000		\$0.00	\$0.00	\$0.00	\$5.34
\$2.05	35,000 to 40,000		\$0.00	\$0.00	\$0.00	\$0.00
\$2.60	40,000 to 45,000		\$0.00	\$0.00	\$0.00	\$0.00
		Top Tier	\$0.00	\$0.00	\$0.00	\$0.00
Total			\$41.71	\$40.62	\$49.81	\$65.11

St. George City water rates shown as an example

What will be the cost for a typical household?

Water Rates

Retail water rates in Washington County currently average approximately \$2.38 per 1,000 gallons consumed. The WCWCD currently supplies approximately 45% of all water deliveries in Washington County.

	Estimated Average Monthly Use		
	Persons in Household		
	1	2	3
2017	7,908	15,817	23,725
2020	7,693	15,385	23,078
2030	7,020	14,041	21,061
2040	6,462	12,924	19,386
2050	6,193	12,385	18,578
2060	5,961	11,923	17,884

What will be the cost for a typical household?

Water Rates

Retail water rates in Washington County currently average approximately \$2.38 per 1,000 gallons consumed. The WCWCD currently supplies approximately 45% of all water deliveries in Washington County.

Estimated Monthly Water Bill					
		Rate per 1,000 gallons	Persons in Household		
			1	2	3
Total Monthly Water Bill	2017	\$2.38	\$28.25	\$38.42	\$50.08
	2020	\$2.63	\$28.67	\$40.25	\$53.33
	2030	\$3.80	\$29.75	\$46.25	\$64.67
	2040	\$5.46	\$30.42	\$51.92	\$75.75
	2050	\$7.18	\$30.92	\$56.42	\$84.83
	2060	\$8.76	\$30.92	\$58.50	\$89.58
Incremental Monthly Water Bill	2017	\$0	\$0	\$0	\$0
	2020	\$0.25	\$0.42	\$1.83	\$3.25
	2030	\$1.42	\$1.50	\$7.83	\$14.59
	2040	\$3.08	\$2.17	\$13.50	\$25.67
	2050	\$4.80	\$2.67	\$18.00	\$34.75
	2060	\$6.38	\$2.67	\$20.08	\$39.50

Property tax impact: Existing tax liability

Total Property Tax Liability

		Household Value (Primary Household)					
		\$150K	\$250K	\$350K	\$500K	\$750K	\$1M
Annual Property Tax Liability	2017	\$851	\$1,419	\$1,987	\$2,838	\$4,257	\$5,676
	2020	\$904	\$1,506	\$2,108	\$3,012	\$4,518	\$6,023
	2030	\$1,101	\$1,836	\$2,570	\$3,671	\$5,507	\$7,343
	2040	\$1,343	\$2,238	\$3,133	\$4,475	\$6,713	\$8,950
	2050	\$1,637	\$2,728	\$3,819	\$5,455	\$8,183	\$10,911
	2060	\$1,995	\$3,325	\$4,655	\$6,650	\$9,975	\$13,300

Property Taxes

Property taxes in Washington County range from 0.8915% to 1.3252%. WCWCD will phase in its remaining 0.0278% property tax rate through 2026, bringing its total rate to 0.1%.

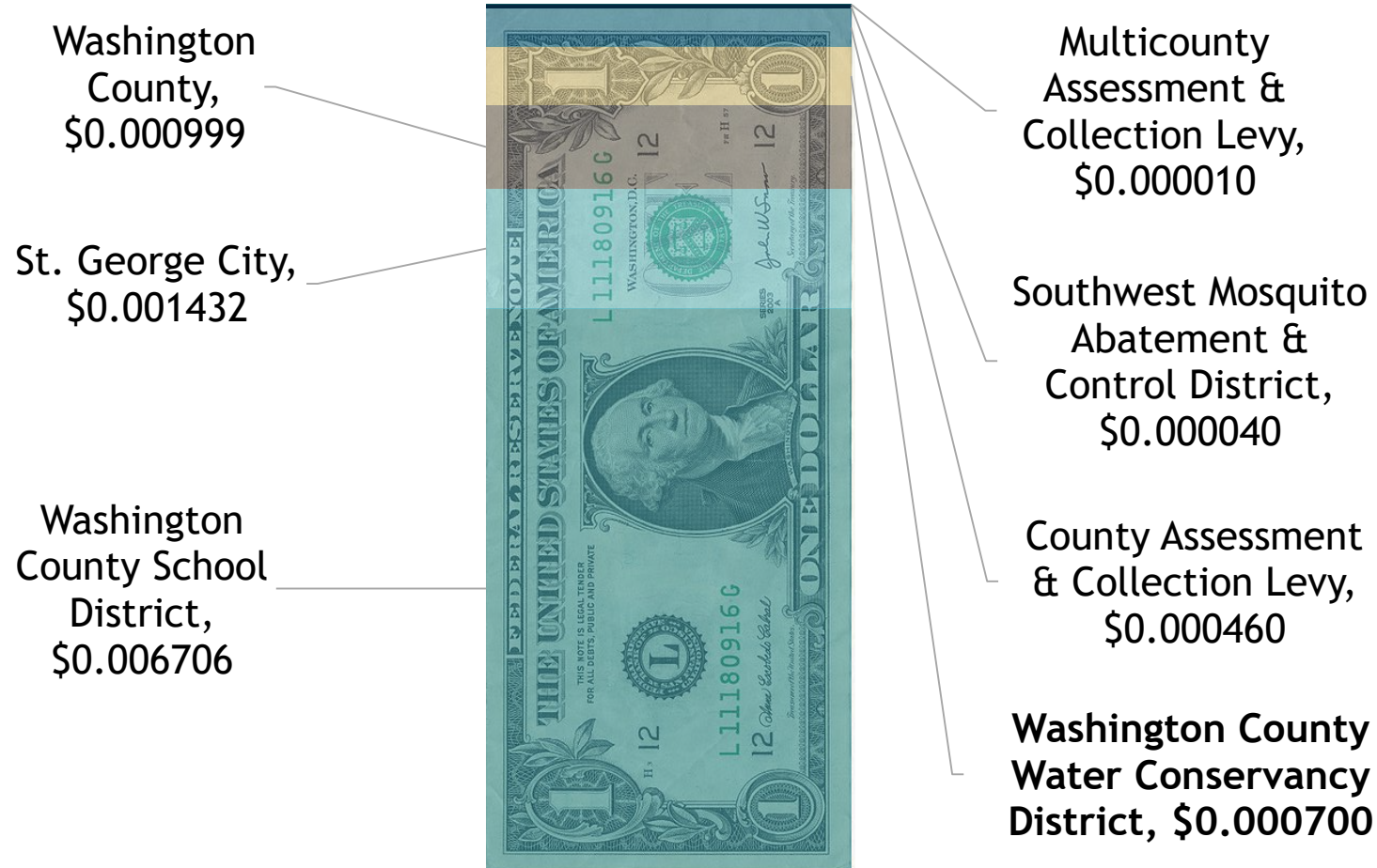
What will be the cost for a typical household?

		Household Value (Primary Household)					
		\$150K	\$250K	\$350K	\$500K	\$750K	\$1M
Total WCWCD Property Taxes	2017	\$58	\$72	\$107	\$130	\$159	\$193
	2020	\$96	\$120	\$178	\$217	\$264	\$322
	2030	\$135	\$168	\$249	\$304	\$370	\$451
	2040	\$193	\$240	\$356	\$434	\$529	\$644
	2050	\$289	\$361	\$534	\$650	\$793	\$967
	2060	\$385	\$481	\$711	\$867	\$1,057	\$1,289
Incremental Property Taxes	2017	\$0	\$0	\$0	\$0	\$0	\$0
	2020	\$38	\$48	\$71	\$87	\$105	\$129
	2030	\$77	\$96	\$142	\$174	\$211	\$258
	2040	\$135	\$168	\$249	\$304	\$370	\$451
	2050	\$231	\$289	\$427	\$520	\$634	\$774
	2060	\$327	\$409	\$604	\$737	\$898	\$1,096

Property Taxes


Property taxes in Washington County range from 0.8915% to 1.3252%. WCWCD will phase in its remaining 0.03% property tax rate through 2026, bringing its total rate to 0.1%.

Property tax allocations in Washington County



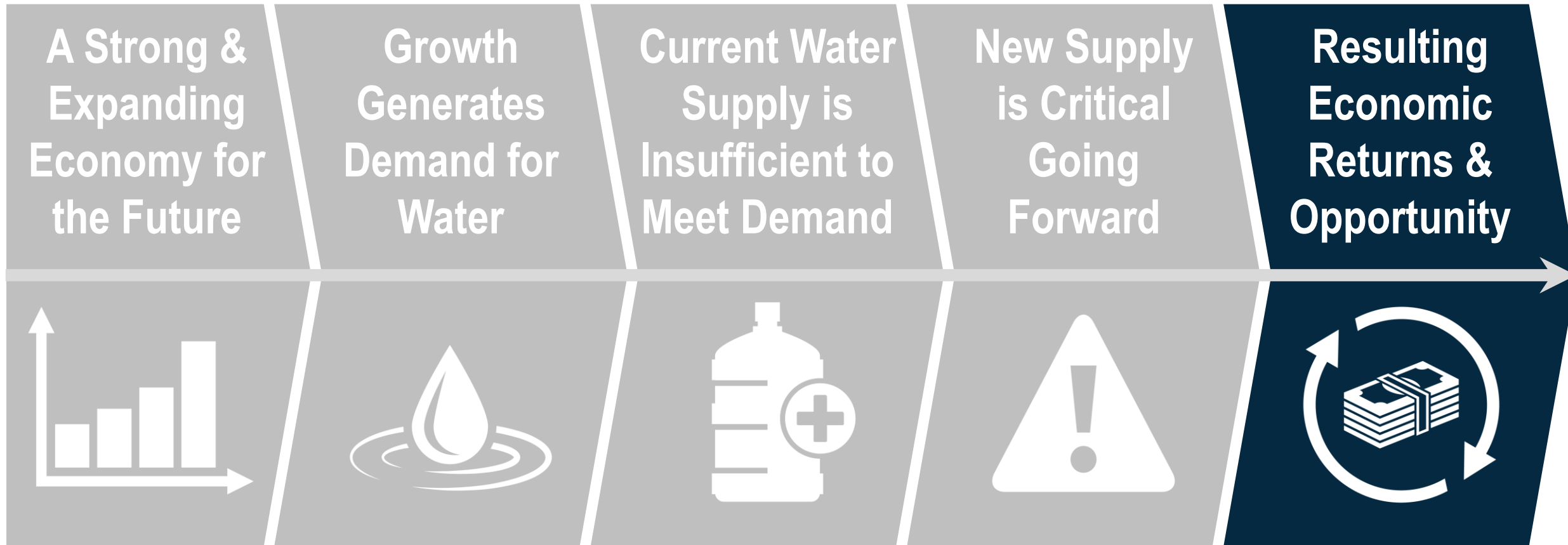
**Combined St.
George
Property Tax
Rate:
\$0.010347**



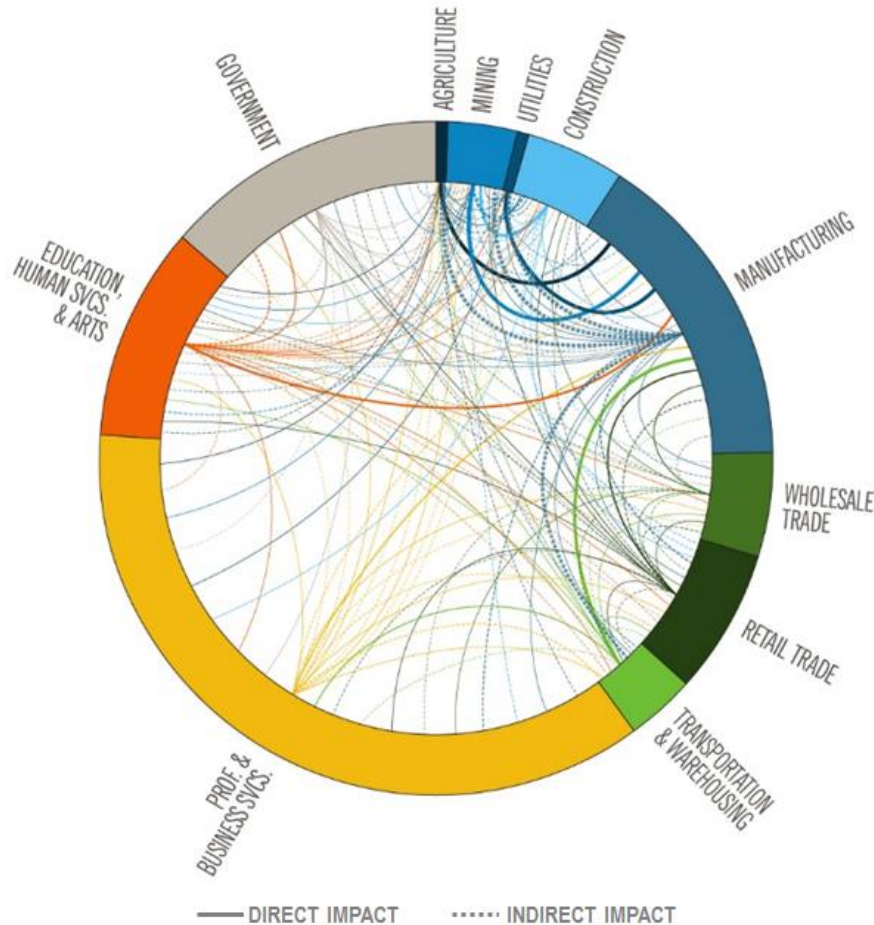


There is no single
strategy or silver
bullet to address
Washington County's
water challenges

The Importance of Water Infrastructure Investments



Quantifying the economic return on investment



Utah's economy is highly integrated and interconnected

Absent additional water resources, instability will change the growth pattern in Southern Utah limiting the region's economic potential



One measure of economic return on investment

	Washington County Core Metrics (2016)	Core Metrics per Acre Foot Demanded (20,652 M gal)	Additional Economic Potential with Current Projects (26,801 M gal) [4]
Population [1]	160,371	2.53	208,115
Households [1]	58,062	0.92	75,348
Employment [2]	60,188	0.95	78,107
Businesses [2]	5,371	0.08	6,970
Personal Income [3]	\$5.3 B	\$83,623	\$6.9 B
Wages & Salaries [2]	\$2.1 B	\$33,133	\$2.7 B
Gross Regional Product [3]	\$5.1 B	\$80,467	\$6.6 B

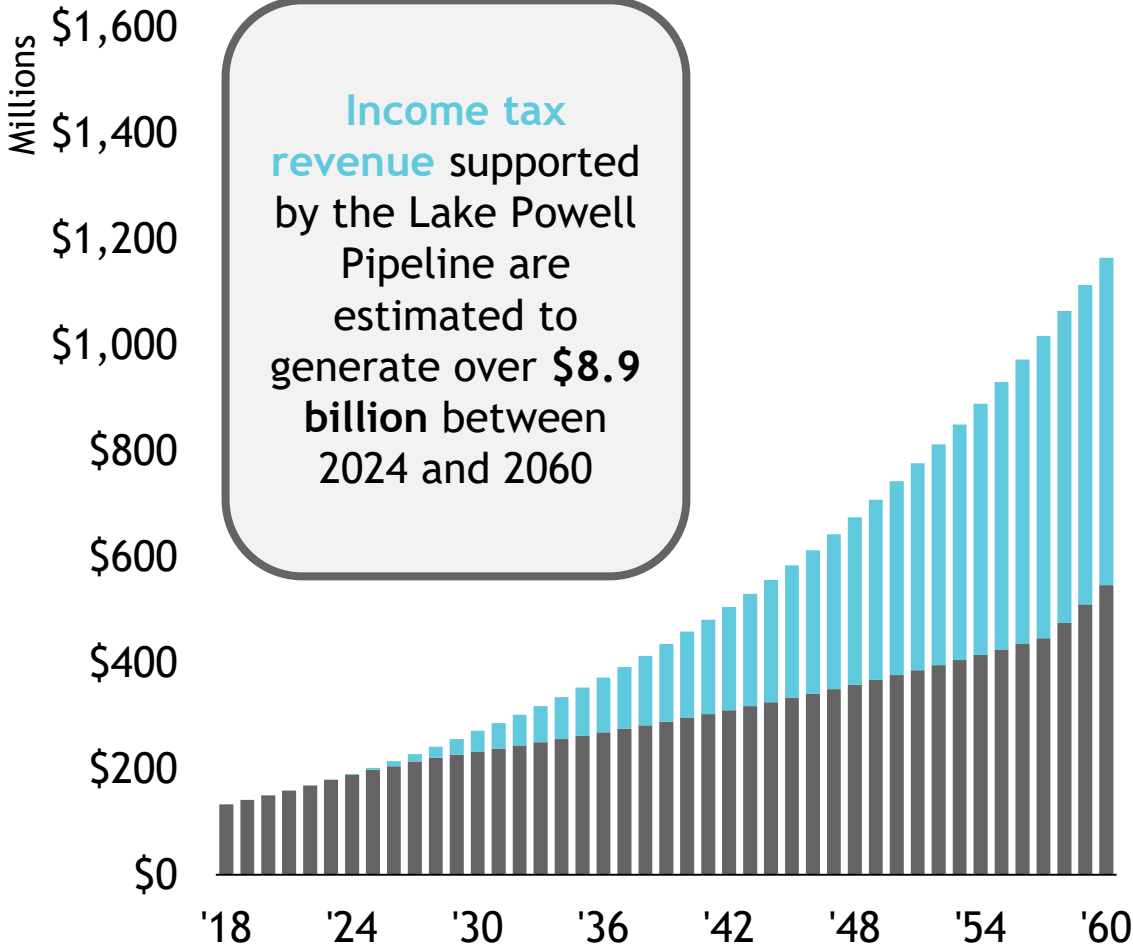
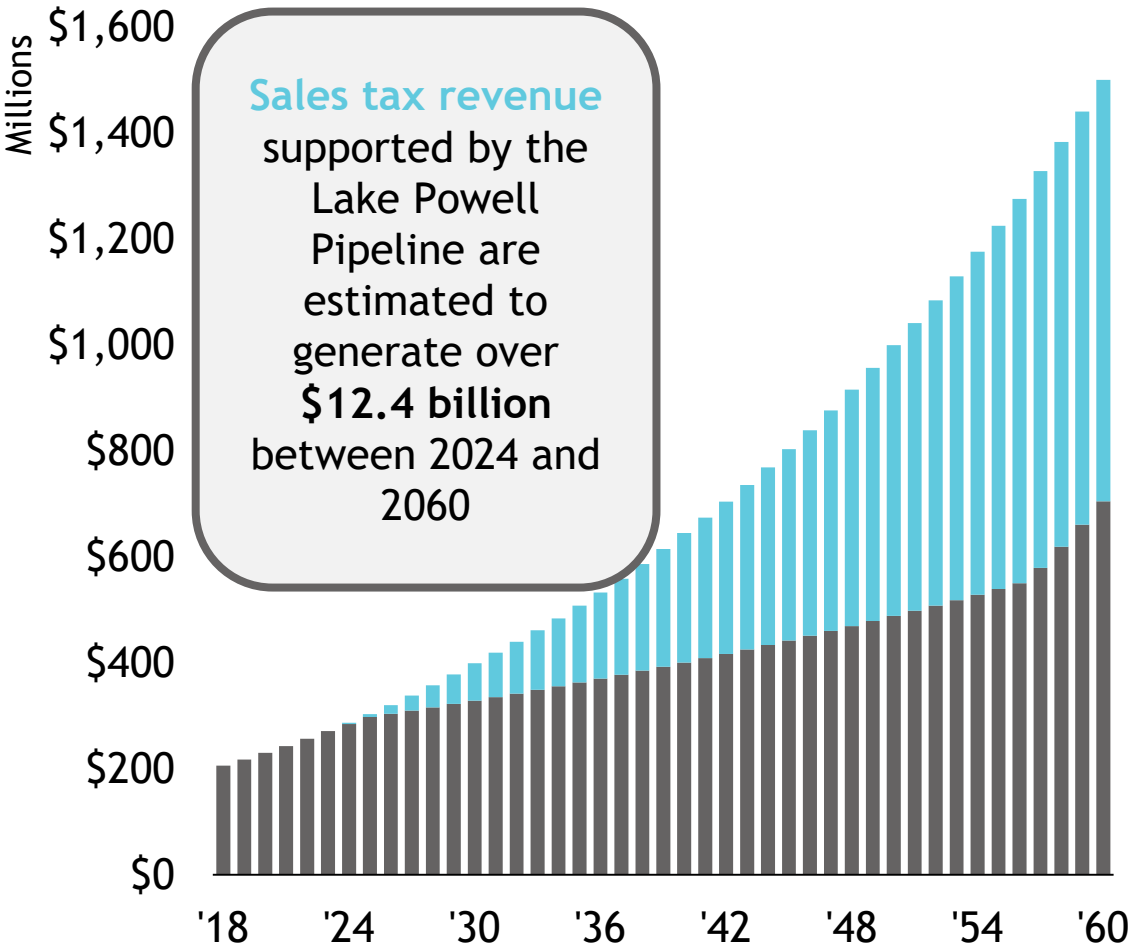
[1] Kem C. Gardner Policy Institute

[2] U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages; Washington County, Utah

[3] U.S. Bureau of Economic Analysis Regional Data: Washington County, Utah or St. George MSA

[4] Baseline estimates. Notes that the effects of conservation, advancements in construction technology and economic diversification have the potential to significantly increase the simple calculations provided.

Quantifying the fiscal implications



Quantifying the state's benefit from the investment

**\$21.4
Billion**

\$21.4 billion generated in incremental sales tax revenue and income tax payments between 2024 and 2060

Sizing up Washington County's infrastructure cost

\$815 B
**WC Gross
Product**

Washington County's Gross Domestic Product (a measure of total economic activity) is currently \$5.1 billion; through 2060 it is projected to be \$815 billion

\$32 B
**WC Pers.
Income**

Taxable personal income in Washington County is just under \$3 billion today and is projected to exceed \$32 billion in 2060

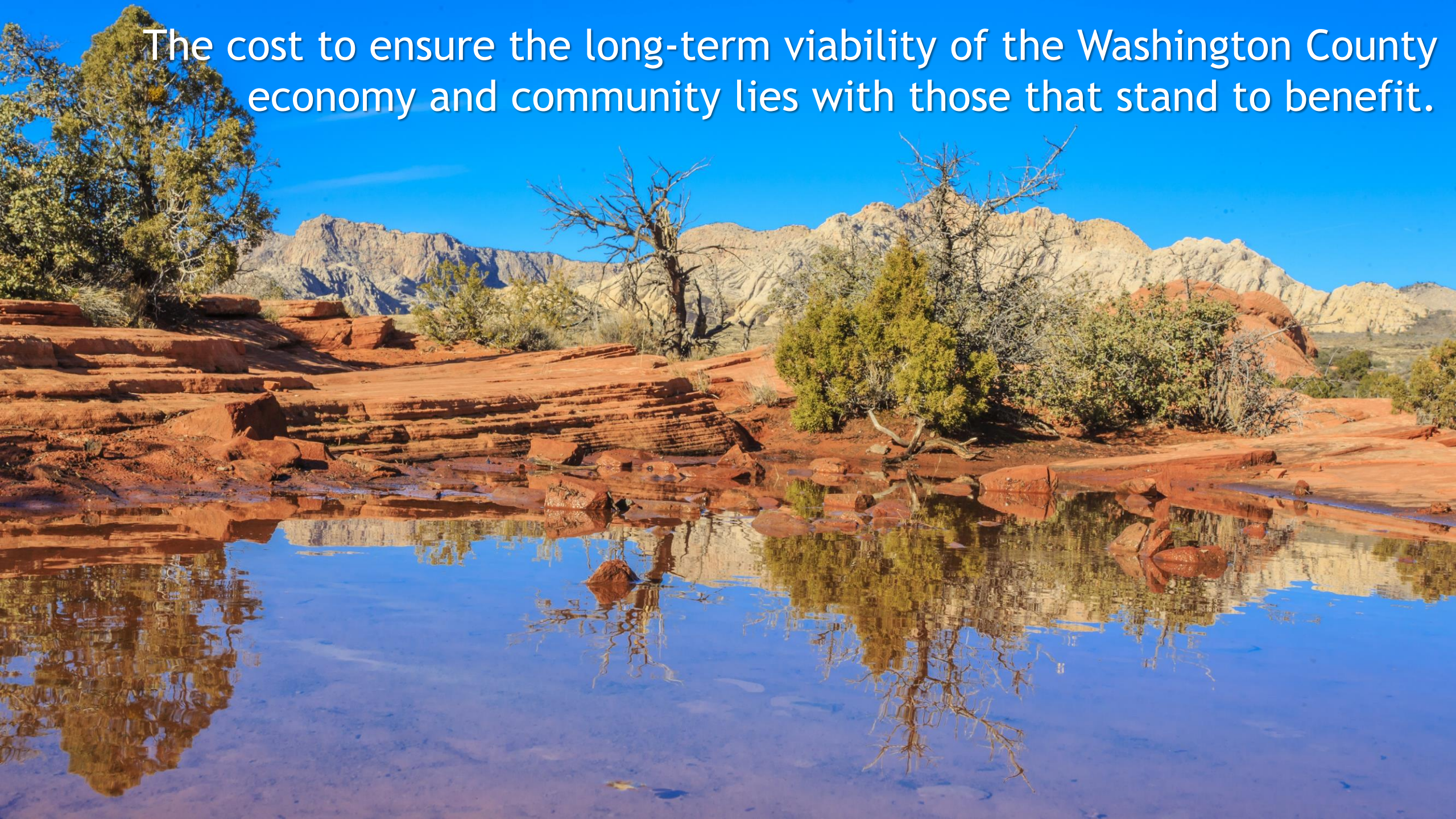
\$33 B
**Utah Water
Need**

Total water infrastructure needs throughout the state of Utah are estimated to be \$32.7 billion; nationally that figure exceeds \$1 trillion

\$19 B
**Utah
Assets**

The state of Utah's 2017 Comprehensive Annual Financial Report reflected \$18.7 billion of capital assets held on the state's books

The cost to ensure the long-term viability of the Washington County economy and community lies with those that stand to benefit.





WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT

Benefits of WATER INFRASTRUCTURE

In Washington County

